DELIMITATION AND COMPARATIVE ANALYSIS OF THE CENTRAL AREAS OF MEDIUM SIZED TOWNS IN CENTRAL SCOTLAND.

by

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CONTENTS

(Maps are included in a separate volume)

SUMMARY

The thesis is written in three main sections. The first section describes and explains why a wider range of land uses can justify a central location in medium sized Scottish towns than in the larger centres studied previously. The derivation of the land use based delimitation technique used in the thesis is then described.

The second section considers the historical growth of the central area in relation to its changing function and to factors attracting and constraining growth. These factors are shown to be similar to those noted in earlier studies.

The central area is seen to have had continuous growth since 1882 with the growth prior to 1912 being mainly for additional retail floor space and in the direction of the main population expansion. Growth since, and particularly in the post 1938 period, has been mainly for additional office floor space, in the direction of housing suitable for conversion to offices, and for other central area uses, in the land behind and between the main shopping streets.

In the third section the internal structure of the central area is investigated in relation to such geographic aspects as the location of and degree of concentration around the Peak Land Value Intersection, the Central Area Mean Point and the mean points of individual land uses. The relationship between land use and land values is investigated through the county assessor's frontage rates.

A clear spatial ordering of land use is identified within the central area of medium sized Scottish towns with most land uses locating in relation to their ability to command the more accessible sites. The main land use categories which do not follow this pattern are offices, many of which do not require a highly accessible site and are located more in relation to the availability of suitable premises.

The spatial ordering of land use within the central areas of medium sized Scottish towns is similar to that noted by other research workers who have studied the central business districts of generally larger centres in industrialized countries. The main differences, such as the relatively low intensity of use and the lack of any increase in building height in the core of the central area, are directly related to the lower absolute demand for sites.

A brief fourth section compares the character of the central areas of medium sized Scottish towns with that of the central business districts of larger settlements and also identifies some implications for planning policies.

INTRODUCTION

In recent years, considerable research has been carried out in the town centres of urban areas. The research workers who have contributed most to this study are R.E.Murphy and J.E.Vance Jr., whose work in North America[1] has inspired many others to develop existing work and make similar studies, and whose research techniques have been the basic tool for much of this work. Murphy and Vance, working in North American towns, in the 100,000 to 200,000 size range, evolved techniques of delimitation and comparison, which have since been applied, often with modifications, to a wide size-range of towns in many countries.

Despite the considerable volume of research which has been carried out throughout the world, little has been published on British towns in general and Scottish towns in particular. In England, studies have been made of some of the larger towns and of the conurbations, e.g. J.P.Mika[2] while in Scotland the only published research is that of D.R.Diamond[3] who has studied Glasgow's central business district.

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1. (a) R.E.Murphy and J.E.Vance Jr., "Delimiting the C.B.D.," Economic Geography, Vol 30, No.3, 1954.
   (b) R.E.Murphy and J.E.Vance Jr., "A Comparative Study of Nine Central Business Districts", Economic Geography, Vol 30, No.4, 1954.
   (c) R.E.Murphy, J.E.Vance Jr, & B.J.Epstein, "Internal Structure of the C.B.D." Economic Geography, Vol 31, No.1, 1955.
2. J.P.Mika, "A Comparative Study of Some English and American Central Business Districts", Unpublished Ph.D. Thesis, Clerk University, 1965.
3. D. R.Diamond, "The Central Business District of Glasgow", Proceedings of the Symposium on Urban Geography. Lund 1960.

As noted above, a start has been made on studying the larger towns and the conurbations of Britain but no research workers, to date, have shown much interest in the town centres of our small and medium sized towns. In 1964, when this research was begun many of these smaller communities were seriously contemplating, and several have since commenced, large comprehensive re-development schemes within their centres, and it was felt that a knowledge and understanding of the existing town centres would be of particular value at this time and would add to the knowledge of towns in general.

The main aim of the study is to gain a knowledge and understanding of the nature of the town centre of medium-sized towns in central Scotland and of the forces which have created its present structure and character and which will help to mould its future.

CHOICE OF TOWNS

In choosing the towns for study the following six points were kept in mind.

1. They should be within a restricted size range, so that variations due solely to population size would be kept to a minimum. A size range of 30,000 to 50,000 was originally sought but was later extended slightly in both directions to include Stirling (28,015)[1] and Kirkcaldy (51,945).

2. The towns should have a wide geographical distribution throughout central Scotland in order that any general conclusions would be on a representative sample of towns.

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1. The population of the eight burghs has been extracted from: Registrar General for Scotland: 1966 Census Preliminary Report.

3. The choice of towns was restricted to free standing centres, thus avoiding such dual centres as Motherwell and Wishaw, and Coatbridge and Airdrie, which, while of interest in themselves, are not typical of medium sized towns in central Scotland in that they have two competing central areas within a short distance of one another.

4. Suburban centres of Glasgow were avoided as it was felt that the close proximity of Glasgow City and the effect of the resultant competition from the city centre, while again of interest and value, could not be covered in this study.

5. The economic base of the medium sized towns to be studied should be as varied as possible in order that any effects of different economic base on the central area could be studied and any general conclusions would be drawn from a representative sample of centres.

6. Where possible two of any type of town were included in the study.

Eight towns fulfilling the above requirements were selected for study and these are

Ayr 46,475. Located on the West Coast, Ayr is an important administrative, commercial and tourist centre.

Kilmarnock 47,964. Also a West Central Scotland burgh, Kilmarnock is primarily an industrial centre but is in addition an important commercial centre.

Dunfermline 50,138. An east coast burgh, Dunfermline is an industrial town in which the Naval Dockyard is the largest employer.

Kirkcaldy 51,945. Situated on the Fife coast, Kirkcaldy is primarily an industrial centre but has a reasonably balanced employment structure with commercial and administrative activities both fairly well represented.

Perth 41,296. Located on the northern fringes of the Central Lowlands, Perth is a major tourist and commercial centre.

Stirling 28,015. Like Perth, Stirling is located on the northern fringes of the Central Lowlands and is also an important tourist and commercial centre.

Falkirk 37,767. Falkirk is situated in Central Scotland and is essentially an industrial town although it has a significant role as a regional shopping centre.

Hamilton 45,554. Hamilton is an important administrative and commercial centre in central Lanarkshire.

THE CENTRAL AREA

In their study of larger American towns in the 100,000 to 200,000 size range Murphy and Vance[1] recognised a definite region in the centre of all their towns which they called the central business district (CBD). In this region was to be found the concentration of the main office and retail activities of the town. They argued that the high value of land in the CBD excluded almost all non-profit making establishments from this region and that only a restricted number of profit-making establishments could justify such a location. They showed that this concentration was due to "the

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1. R.E.Murphy and J.E.Vance Jr. Op.Cit.

focus of pedestrian and automobile traffic on the CBD. By way of the transportation net, the remainder of the city and an area of decreasing intensity extending far beyond the city's corporate limits, are orientated towards the CBD".

Was such an area to be found in the Scottish medium-sized town? While previous experience clearly indicated that office and retail activity was concentrated in the centre of the smaller Scottish towns, investigation in the field showed that the commercial activity was not as concentrated as in the larger American examples but was interspersed with a wide range of other land uses. It soon became apparent that the typical town centre of the Scottish medium sized town was not a central business district in the strict Murphy and Vance sense of the term but rather a region in which profit making and non profit making activities could justify a location. It was considered that the term Central Area best described this region and that the use of this term would avoid confusion.

FIELD RESEARCH

The field work for this thesis consisted of two major and three minor research projects. The first of the two major projects was a land use survey in the 8 town centres. An area larger than that thought to be included in the central area was mapped in the field at the 1/1,250 scale. The land use classification used in this survey is shown in Appendix 1 and a sample block of the survey is shown in Appendix 2. This survey was carried out during 1965 and the first half of 1966.

During 1966, the County Assessors of Ayr, Fife, Lanark, Perth and Stirling gave the author access to their

records from which the material for the second major survey was drawn. The 1966/67 gross annual valuation and the rate per square foot applied to shops and offices in calculating the assessments were abstracted, along with the floorspace of all subjects within the central area. Much of the information collected by the County Assessors, for example floor space statistics, are confidential and could be of considerable value to competitors. It is not therefore possible to divulge information about individual valuation subjects in this thesis.

The first of the lesser surveys involved the collection of historical land use and valuation data from the old valuation rolls available in Register House, Edinburgh. These documents date back to 1865 but due to lack of street numbers in the earlier editions, 1882 was chosen as the date for the first survey. 1912 and 1936 were chosen as examples of the pre-war and inter-war years and these three, together with the information from the assessor's records for 1966, gave samples over a period of 84 years.

A further survey, that of the physical growth of the towns, was carried out in the Scottish National Library, where most early maps of Scottish towns are readily available. The 6 inch Ordnance Survey editions of approximately 1882, 1916, 1936 and 1960 were used for this survey. Aerial photographs provided by the Aerial Photographs Library of the Scottish Development Department were consulted in order that the 1966 position could be identified.

The final survey, that of selected land users in Dunfermline and Perth, was carried out to throw light

on the reasons why land uses which would not have justified a central location within the American central business district as defined by Vance and Murphy, had chosen a location within the central area of medium sized towns in central Scotland.

OUTLINE OF THESIS

The Thesis has been written in three distinct sections. Section 1 starts with a discussion of the need for, and possible techniques of, delimitation of the central area and then describes in detail the techniques evolved for this study.

Section 2, which looks at the historical development of the central areas includes a brief description of the growth and character of the eight selected towns before looking in detail at the growth of the central areas.

In considering the historical growth of the central areas of Scottish towns attention is paid to the factors influencing this growth, particularly the relationship between the physical growth of the towns and the development of the central areas. Zones of assimilation and discard are located and major land use changes within the central areas are identified.

The various aspects of the physical nature of the central areas are considered with regard to their shape and size, and the location of the geographical centre, mean point of central area land uses and the peak land value intersection. An understanding of these aspects involves the study of topography, historical growth, natural and man-made constraints to expansion and pedestrian and traffic flows.

Section three looks in detail at the distribution of central area land uses within the eight town centres. Particular attention is paid to such geographic aspects as the location and degree of concentration around the peak land value intersection and the mean point of individual land uses. To assist in the comprehension of the distribution patterns the relationship between land uses and land values, as reflected in the assessors frontage rates, is investigated.

In the conclusions to section three the functions of the eight central areas are considered by reference to the number of subjects and total floorspace in the main land use groupings and these are related to the population size and economic character of both the towns and their hinterlands.

The main conclusions of each of the three sections are brought together in a brief chapter at the end of the thesis.

SECTION 1

DELIMITATION OF THE CENTRAL AREA

Before any comparative analysis of the central areas of medium-sized towns can be made, it is first necessary to define the region under consideration in such a way that strictly comparable areas can be studied. The central area, as is the case with almost all regions in social geography, has no distinct boundary but a transition zone in which the qualities of the region become increasingly less marked. The problem is, therefore, to devise a delimitation technique which will (a) approximate as closely as possible to the area which is considered to have the qualities of the central area and (b) delimit a strictly comparable area in each town.

Clearly, before any standardised delimitation technique can be devised, it is necessary to describe the area to be defined and identify those qualities which make it a distinctive region within the town.

Interest in the town centres of medium-sized Scottish towns was generated by Murphy and Vance's work on American cities and it is useful initially to consider the central business districts which they identified. They identified a region in the centre of American cities which had "... the normal qualities of a region. It has a core area in which the definite qualities reach their greatest density, it has zonal boundaries and, for the most part, these boundaries are impermanent." They considered that the function of this region was "the retailing of goods and services, and the performance of various office activities for private profit."

The question which was considered early in this thesis

was, do medium-sized Scottish towns have a central business district with the same qualities as those identified in American cities? Experience in the field of urban studies indicated that there was a distinct and unique region in the town centre of Scottish towns and that the retailing of goods and services and the performance of various office activities for private profit was a function of this region. Field work in terms of a land use survey suggested, however, that other land uses without the normal profit motive might justify a town centre location and in many cases these were present within the core of the town centre. Vance and Murphy held that the absence of the normal profit motive excluded such land uses as Government offices, parks, organisational establishments and industry from the central business district, although they did include the central Courthouse, the General Post Office, State and Federal Buildings and parking. Initial investigations suggested that a wider range of land uses could justify a central area location in medium-sized Scottish towns and that an appraisal of all land uses was required to decide which were in fact centrally orientated.

The appraisal of land use location was based on two lines of investigation, the first a pilot survey of the location of each land use throughout the towns of Perth and Dunfermline, and the second a structured interview survey with the proprietors of a sample of establishments in each land use. The conclusions of these investigations are summarised below.

RESIDENTIAL LAND USE

Although residential properties are found throughout most of the central area, it is not considered that this is a true central area land use. Evidence from

the study of the growth of the central area, Section 2, clearly demonstrates how residential land use is displaced as pressure for additional space for central area land use increases.

RETAILING

All retailing located in the town centre is considered to be a central area land use. The main reason given for a central location was the well-established one of the greatly increased turnover and profits possible at a location close to the point of maximum accessibility, within the town. Representatives of the retailing establishments were interviewed and they considered the whole of the town and its surrounding hinterland to be their catchment area, and further that there were no alternative locations within the town where they could profitably carry on their business. The survey of the location of retailing in the town showed that most of the specialised retail establishments were located in the town centre while those located elsewhere were usually smaller and carried a restricted range of goods. In the case of shops selling convenience goods, only a small proportion were located in the central area but once again it was the largest and most specialised which were to be found there. Many had been established in the town centre when it was the only shopping centre in the town and had survived both by continuing to provide a service for those living in or close to the central area and by providing a service for those using the central area for other purposes including more specialised retailing. Others have since established themselves there to gain advantage from the dual possibilities noted above and among this group supermarkets are the most significant.

SERVICE ACTIVITIES

Service activities, such as dry cleaners, shoe repairers and hairdressers can justify a central location in that, while they seldom in themselves attract people into the town centre, they depend for their existence on the concentration of people working in and visiting the central area. In many cases the use of the services provided in these establishments is part of a multi-purpose visit to the central area.

While only a modest proportion of all service activities are to be found in the central area it is here that one finds the only major concentration of such activities and that the largest and more specialised in any type are to be found.

COMMERCIAL OFFICES

Commercial offices (professional, financial and general business) are very strongly concentrated in the centre of Scottish medium-sized towns and are certainly a central area land use. Offices located in town centres most often serve both the town and its surrounding hinterland. They require infrequent contact with a large number of clients and often fairly frequent contacts with one another and with other establishments in the town centre. The focus of public transport on the central area, the large proportion of the region's population that visits the town centre regularly and the links with other central area land uses necessitates a concentration of this activity in the central area. Unlike retailing which depends heavily on frequent contact with the public and an easily accessible location to make it viable, office activity does not require

such a location and in most cases is satisfied with a location at some distance from the point of maximum accessibility.

GOVERNMENT OFFICES

Almost all local and national Government offices are located in the centre of medium sized towns in Scotland and are accepted as a central area land use. While part of the reason for such a location is historical, the main reason for their continuation and expansion in the town centre is once again the central area's unique accessibility. Most Government offices provide a service for the population of the town and in many cases its hinterland and require a considerable volume of contact between officials and the public. It is therefore important that they be in a location which is accessible, a condition which can only be adequately fulfilled in a central site. Other Government facilities such as main libraries and meeting halls also require a central location for similar reasons.

CAFES AND RESTAURANTS

In medium sized towns in Scotland most of the better quality cafes and restaurants are located in the central area. They have a dual role in serving both the shop assistants and office workers and their customers and clients. In order to be competitive the cafes and restaurants have to be located within easy reach of the main pedestrian flows and are therefore a true central area land use.

HOTELS

On studying the type and location of hotels in Scottish medium sized towns it became clear that not all hotels were

centrally orientated. Two main types could be identified, the first where a central site was essential or desirable for their operation and the second where such a site was not necessary. The hotels which were centrally orientated usually had large public lounge and cocktail bars, served lunch and dinner to the general public and provided first class overnight accommodation. These hotels chose a central location because of its accessibility, being close to the main public transport terminals, and a large proportion of their business came from the clients of the shops and offices and the commercial travellers who dealt with them. The hotels which cannot justify a central location are normally smaller hotels of the guest house type whose location on the fringes of the central area, especially in the case of Ayr, is more coincidence than a conscious desire for a central location. In the case of Ayr, the proximity to the sea and the availability of large Victorian houses, of the mansion type, which could be easily converted to hotels, accounts for the large number of hotels to the west of the central area. In the field it was usually fairly easy to differentiate between the hotels which required a central area location and those which did not.

PUBLIC HOUSES

Public Houses are an integral part of the commercial life of the central area. A location in the central area offers a large potential daytime custom of shop and office workers and shoppers and a large evening custom of people entering the central area for social purposes. In the medium sized towns residential areas are within easy walking distance of the main shopping areas and therefore a central location offers the advantages of both residential and non-residential custom.

ENTERTAINMENT

The central area's unique local and regional accessibility has given rise to the growth within it of commercial entertainment and recreational facilities. In order to operate efficiently most entertainment facilities require a large catchment within the town and its region.

WHOLESALING

Two main branches of the wholesale trade have been identified in the central areas being studied, merchant warehousing and wholesale storage.

Merchant warehousing. In the views of the warehouse proprietors interviewed, changes in trading methods are making a town centre location increasingly desirable to many merchant warehouses. The wholesale trade is under severe pressure from large retail concerns who buy direct from the manufacturer. To stay in business the industry has been required to improve its service and open new lines of business. The increasing use of the motor car allows more frequent visits to the warehouse to collect smaller amounts of goods and a regionally accessible site is desirable. Small shopkeepers from neighbouring villages come in by bus and car on their half day and an accessible site where the customer can combine business with pleasure or a domestic shopping trip is a major advantage.

Where merchant warehousemen have to provide a speedy service to retail outlets or offices within the central area and be in an accessible location for small shopkeepers throughout the town and its hinterland, a central area site is desirable and this type of wholesaling is therefore considered to be a central area land use. In

Dunfermline eight of the town's ten merchant warehousemen have premises in the Central area.

Wholesale storage. This type of activity, for example whisky warehousing, is not considered to be a central area land use as, in the few cases where such land use exists in the medium size town centre, the town centre location is much more a factor of history than a conscious desire for such a location.

MEDICAL SERVICES

The medical services of Doctors, Dentists, Veterinary Surgeons, Opticians and Chiropodists have different locational requirements within the central area and different degrees of orientation towards the point of maximum accessibility but in all cases a central site was sought for the majority of surgeries. Like retail and service activities, medical services serve the whole town, and in varying degrees its hinterland, and are in competition with one another for clients. A central site is therefore desirable.

Doctors. Accessibility is a prime factor in the consideration of the siting of a doctor's surgery. There is considerable saving in time for the doctor if as many patients as possible visit him and experience has shown that if the surgery is in an accessible location a higher proportion of patients will visit the doctor rather than call him to their house. In the medium size town most doctors still consider the whole of the town as their catchment and a central site therefore reduces the total amount of travel both for the doctor in visiting the patients and for the patients visiting the doctor. One of the doctors interviewed considered that a central site was particularly important when

starting a practice as there was a greater pedestrian flow in a site near the central area and the nameplate outside the surgery helped to encourage business. In a large number of cases the doctor combines his house with his surgery and as two rooms at least are necessary for the practice only large houses are suitable and in most of the towns studied these were relatively scarce; in the case of Dunfermline only four streets within reasonable distance from the central area are suitable and all these are just outside the main business area. Eight of the town's eleven surgeries are located in these areas on the periphery of the Central area.

Dentists. There are several dentists in each medium size Scottish town and in most cases they are located within the central area. As the dentist serves a wide area including both the town and its hinterland a site in the centre of town is considered necessary. The importance of competition even in this field of the medical services is emphasised by the desire for a location close to the point of maximum accessibility and by the stated preference of one of the dentists interviewed for a location close to an easily identified landmark such as the Town Hall. Only one of Dunfermline's nine dentists is located outwith the Central area or its immediate environs.

Opticians. Opticians are in a similar situation to dentists in that they serve a very wide catchment and require a site in an accessible location if they are to be competitive. Whereas a site on the main retail frontage is not essential a location close to the main pedestrian flows was considered necessary by those interviewed.

Veterinary Surgeons. In spite of the fact that there

are only a few veterinary surgeons in each town, competition for domestic trade is extremely severe and accessibility to a wide catchment is thought essential to the successful operation of a small animal surgery. Although a central site is not necessary for all practices, some veterinary surgeons, i.e. those dealing with domestic pets, consider a central site essential.

Chiropodists. Accessibility to the public was given by those interviewed as the main reason for a central location in the case of chiropodists' surgeries. Competition from other chiropodists was not cited as a factor in choosing a central location, convenience from the point of view of the customer being the main reason given.

GARAGES AND SHOWROOMS

There would appear to be two main types of location for service garages within medium size towns; a location on a main thoroughfare and a central area location. Garages in a central location tended to be old established firms, some dating from coaching days, specialising in the sale of new cars. Often these were the region's main distributor for a manufacturer and the sale and repair of this make of car was a major part of the business. Petrol sales made up only a small part of the turnover, day and night garaging, car sales, repairs and in some cases a taxi service, being more important. Reasons given for a central area location were (a) accessibility for individual customers and to garage owners requiring spare parts, (b) the considerable volume of trade to be derived from business men and others working in the central areas, and (c) the provision of garage facilities for residents living in and near the central area. In the case of taxi services, the central area generates

a high percentage of all trips while aggregate travel to other calls is minimised by a central area location.

INDUSTRY

Industry is present to a greater or lesser extent in the centres of all Scotland's medium size towns but in most cases accessibility to the population of the town and its hinterland, while of some value from the point of view of obtaining workers from the widest possible pool of labour, is not a primary factor in the locational decision, such factors as a location near the rail terminal, or historical development, being of greater importance. The field studies have shown, however, that a few industries require a central location for efficient operation and such industries can be grouped into two main types. The first includes bakers, printers, jewellers and dressmakers where the industrial activity is integrated with the main retailing or service function of the establishment as a whole. Considering bakehouses in more detail as an example of this group, the assessor's records show that almost all bakehouses were established in the pre-first world war period when the shop and the bakehouse were a family concern and were necessarily integrated. In recent years there has been a substantial decline in the number of bakehouses in the central area accompanied by a rundown to a lesser extent in the number of retail outlets. The retail outlets which continue to operate without integrated bakehouses are usually one of a chain of shops operated by national or regional concerns who have centralised their baking facilities. Although the number of bakehouses in the central area has declined those that remain can still compete with the large firms, particularly by concentrating on specialised confectionery

and by the integration of a cafe or restaurant with the industrial and retail operations. It seems likely that some forms of baking will continue to be viable in the central area and the bakers' faith in the future is in some cases evidenced by substantial capital investment in new plant.

The second group of industries which can justify a central location are the skilled service trades; plumbers, joiners, painters and decorators, electricians, glaziers and stone masons, which are fairly heavily concentrated in the central area relative to the town as a whole. The representatives of these industries who were interviewed were very strong in their views that a central location was the best one from which to operate their business. Much of their business, particularly with new clients, involved initial face to face contact and the central area was the most accessible location for the town's population, the whole of which the tradesmen consider as their catchment. Members of most households in the town visited the town centre at least once a week and could combine a visit to the tradesman's premises with a shopping trip. Most firms had a small retail trade but it was the requirement of a central office site at a less than average rent together with the need for an integrated operation which gave rise to the siting of the whole business in the less expensive districts of the central area.

INSTITUTIONAL USES

The main institutional land uses located in the central area are churches, meeting halls and political and social clubs. While the Church of Scotland churches, of which there are several in each town, are in general located in close proximity to their congregations, the

largest are usually found in the town centre. For historical reasons, having been established when the town was much smaller, they serve the local population living in and around the central area and in many cases, because of their size and long established traditions, they also play a wider role within the community through association with the main Secondary Schools and civic authorities. Churches of a large number of other denominations are also to be found in the town centre. In most cases they are the only church of the denomination in the town and often in the region and they choose a town centre location in order that they can serve the largest possible congregation with the least aggregate inconvenience. Although many of these churches have had a central location for some considerable time, the requirement for a central site can be inferred from the fact that there are a number of recent cases of new churches being built in the central area, and very few, other than Church of Scotland, being built elsewhere.

CAR PARKS

With the increasing use of the motor car for travel to work, business and shopping, car parking is becoming an increasingly important land use in the central area. If the town centre of medium size towns is to operate efficiently there must be an adequate provision of both public and private car parking and this has been recognized in all the recent town centre redevelopment schemes and development plans where an appreciable acreage of land on the periphery of the central area has been zoned or deveoped for this purpose. In addition many firms have developed private car parks, often associated with rear access provision for service vehicles. As car parking is considered to be an essential part of the operation of the central area it has

been included as a central area land use.

VACANT LAND AND PROPERTIES

To include or exclude all vacant land and properties would not give a true picture of the distribution of central area land use as most vacant land and properties in the core of the central area is either being redeveloped for central area land use or in the process of being relet to another central area land use, while vacant land and buildings on the fringe of the central area is often being redeveloped for residential use. For the purpose of delimitation a more accurate method is to treat each vacant site or building in its own right deciding whether or not to include it depending on its intended future land use or, if this is not available, as was the situation in a few cases, its immediate past use as noted in the valuation roll.

CENTRAL AREA LAND USES

The survey of land use confirmed the initial view that the range of land uses which could justify a central location in the medium sized Scottish towns was much wider than that identified for the CBD of larger American centres. A summary list of central area and non-central area land use is shown below.

Central Area Land Use	Non-Central Area Land Use
Retailing of Durable Goods	Residential
Retailing of Convenience Goods	Non-centrally orientated hotels
Service activities	Wholesale storage
Commercial Offices	Industry (most)
Government Offices	Vacant Land (part)
Central Libraries, Halls etc.	Petrol Stations
Cafes, restaurants and public houses	Educational Facilities
Centrally orientated hotels	

Central Area Land Use (cont)

Merchant warehousemen
Professional services
Garages and showrooms
Institutional uses
Selected industries
Car Parking
Vacant Land (Part)

A description of the distribution of individual central area land use is included in Section 3. It is sufficient at this stage to appreciate that this wide range of activities is to be found in the town centre and that this social role, additional to the retailing of goods and services and the performance of various office activities for private profit, means that we are investigating a different region from that considered by Murphy and Vance and others studying larger towns. The term "Central Area" better describe the dual commercial and social role of the region and the use of this term has the benefit of avoiding confusion with studies of the Central Business District of larger towns.

It is now possible to define more accurately the terms Central Area and Central Area Land Use and indicate the role of the central area. The Central Area is the concentration of centrally-orientated land use around the point of maximum accessibility within a town. The region contains the greatest concentration of commercial and social facilities in the town and provides an economic and social service for the town and its hinterland. This concentration of activities is the direct result of the region's unique quality of accessibility.

Central Area Land Uses are those land uses which are characteristically located at or close to the point of maximum accessibility within the town in order that

they can benefit from the Central Area's unique accessibility.

THE DERIVATION OF A DELIMITATION TECHNIQUE

Having briefly discussed the nature of the central area it is now possible to consider the derivation of a delimitation technique. In looking for a technique which could be applied in this study consideration of previous work was carried out in order that benefit could be gained from the experience of other workers in the field. It is not the purpose of this thesis to give a detailed critical appreciation of these techniques but it is relevant to look at the main alternative methods and review their usefulness for the present study.

Previous techniques can be usefully considered in two main groups;
(a) those which involve a direct measurement of the region's qualities, e.g. land use and land values and (b) those which involve an indirect measurement e.g. traffic or pedestrian flows or low population density. The only published national delimitation, that used in the 1961 Census of Distribution, does not clearly fall into either of these groups although it has more affinities with the second. It is discussed first.

THE CENTRAL AREA AS DEFINED BY THE CENSUS OF DISTRIBUTION

The 1961 Census of Distribution[1] defined the central area in all towns over 50,000 and some important market centres below 50,000 and published statistics for both the town as a whole and the central area. Of the towns being studied in this thesis central area statistics are

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1. Board of Trade. "Report on the Census of Distribution and other Services 1961", H.M.S.O. 1964.

available for Falkirk, Kilmarnock, Kirkcaldy, Perth and Stirling.

Unfortunately the delimitation of the central area was not based on any objective technique: indeed it is debatable if such a technique could be devised for the central areas of towns in such a wide population range. The Board of Trade has confirmed that it was the result of a subjective judgment, usually in the light of advice from the local planning authority.

While the boundaries used in the Census of Distribution in all cases include the core of the central areas, there are some strange inclusions and omissions in the fringe areas, e.g. in Perth where the main Co-operative Department Store is excluded from the central area, although it is almost contiguous with the defined boundary. A further problem with the use of the Census of Distribution definition of the central area is the fact that the census is concerned with retailing and services and the central areas have been delimited primarily to include these land uses. In many cases the main office quarters within the town lie outwith the retailing district and have been excluded, yet offices and other services are an important part of the central area as defined in this thesis and must be included in any study of this region of the city.

It is not therefore possible to make strict comparisons between the central areas of towns as defined in the census, nor is it possible to apply a comparable delimitation technique to the other towns being studied and whose central areas were not defined by the Board of Trade.

TECHNIQUES USING INDIRECT MEASUREMENTS OF THE REGION'S QUALITIES. POPULATION DENSITY

The comparative absence of residential population in the central business district of larger settlements has been the basis of several delimitation techniques. In Section 2, the reduction in the number of residential subjects i.e. individual dwellings for valuation purposes, and therefore of population, as a result of pressures from the growth of central area land uses is described. The extension of central area land uses above the ground floor is particularly noticeable in the core of the central area and is much less marked on the fringes which, in general, have central area land uses only at ground level. This is largely related to the fact that the fringe of the central area in medium size towns is normally within fairly easy walking distance of the point of maximum accessibility and that therefore land uses which require to be in the central area but not in its core can be accommodated by horizontal rather than vertical expansion of central area land uses.

Density of population as a tool for delimiting the central area of medium size towns in Scotland is not a practical proposition as in much of the area, street patterns, house type and density and the presence of other non-central area land uses have considerably more influence on population density than the presence of central area land uses.

PEDESTRIAN AND TRAFFIC FLOWS

Both the movement of cars and people have been the basis of delimitation techniques in past studies but as far as Scottish towns are concerned both have the major drawback

that they depend on information which is not readily available and is difficult both to collect and to interpret.

Traffic flows, by concentrating potential custom on selected streets, have played a major role in the evolution of the central area as will be seen in Section 2, the direction of expansion of the retail frontage of the central area having most often been along the streets which the greatest number of people use to get to and from the main shopping area. Traffic flow information however is not readily available throughout the central areas as in most towns there are only figures of volume of traffic along the main arteries. Even if information on traffic flows were available it would be extremely difficult to use it to delimit the central area as in many towns there are very heavy flows of through traffic on a few streets, while in most towns traffic management schemes have distorted the natural pattern of traffic movement.

The movement of people on foot is potentially a more useful tool but once again if the information could be made available, a major task requiring a large number of simultaneous counts, it would be difficult to use, one of the most serious difficulties being the high level of movement in retailing areas compared with office areas.

It is not considered that either of these possible techniques is sensitive enough or reliable enough to be used as a method of delimiting the central area of medium sized towns in Scotland.

METHODS USING DIRECT MEASUREMENTS OF THE REGION'S QUALITIES·FINANCIAL INDICES

The pressure on sites close to the point of maximum accessibility within the town gives rise to a sharp increase in land values around this point and several delimitation techniques have been evolved defining the boundary either directly or indirectly on the basis of a cut off point on the declining land values from the point of maximum accessibility.

VOLUME OF TRADE/TURNOVER

Techniques based on volume of trade or turnover depend on the fact that the higher land values in the central area give rise to higher rents and rates and only those firms which can make these higher payments can survive. To make these payments they must have a higher profit margin than similar stores elsewhere in the town. Two serious statistical problems which arise with any technique based on volume of trade as far as Scotland is concerned are (a) the lack of any reliable up-to-date statistics on volume of trade or turnover and (b) the lack of such information for many non-retailing activities. Even if such information were available, however, it is doubtful if it could form the basis of a reliable delimitation technique, as the lower absolute level of demand for central sites in the medium size towns means that a site within tolerable walking distance of the core of the central area can be had at a cost no greater than would be demanded elsewhere in the town.

LAND VALUES AND RENTALS

The level of land values and rentals has been used to

delimit the central business district of a number of cities. The use of land values rather than information about rents or land and property values has been preferred in that land values are a more direct reflection of pressure on the land as they do not take into account age or condition of buildings.

In Scottish towns very little information is publicly available about either land values or land and property values and even if the information were available, work by Taylor[1] suggests that this information would not be sufficient to form the basis of a delimitation technique.

During the initial collection of data for this thesis, a source of financial information which might have been the basis for a delimitation technique became available in the form of the frontage rates which the county assessors apply to commercial subjects in arriving at their assessment of gross annual value. The details of the method of assessing commercial properties, primarily rental evidence, are described in Section 3 and it is sufficient at this time to state that this source of information indicates that even if data on turnover, land values or rents were available, it could not be used to define the central area although it might possibly be the basis of delimiting the core of the central area were that considered desirable. While the rates per square foot applied by the assessors are very high near the point of maximum accessibility and along the main retail frontages in the core of the central area, away from this area the rates fall off very sharply and throughout the fringe area the rates applied are no higher than those applied to shops elsewhere in the town

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1. W.G.Taylor "Methods of Central Business District and Central Area Delimitation".Unpublished Diploma in Town and Country Planning Thesis, Edinburgh College of Art 1967.

and below that in some of the newer small suburban shopping centres.

It is clear, that, subject to planning approval, it is not financially difficult for any establishment wishing a central location to obtain one within tolerable walking distance of the point of maximum accessibility.

BUILDING HEIGHT, PLOT RATIOS AND FLOOR SPACE INDICES

The very strong demand for sites close to the point of maximum accessibility and along the main retail frontages has given rise to very high land values in the core of the central business district/central area. These high values have necessitated a greater intensity of use with high plot ratios and, particularly in the case of larger centres, the construction of high buildings in the centre of town. In some of the more recently developed American cities, where planning restrictions are less stringent and the relationship between the pressure from central area land uses, with its resultant high land values, and building height is strong, it has been possible to delimit the central business district on the basis of building height. In the medium size Scottish towns however, as is the case in older American and British cities, building height cannot be used as the basis of a delimitation technique. In the case of the Scottish towns the pressure on sites in the centre of the town is undoubtedly high, but while this has given rise to higher plot ratios, especially in the core of the central area, it has not given rise to any marked increase in building height. Three or four storey tenement properties, typical of the retailing areas of most of the towns being considered, continue beyond the boundaries of the central area into purely residential areas while the two storey terraced, semi-detached and

detached properties, typical of the newer office quarters are also typical of the adjacent residential areas.

Methods of delimitation based on plot ratios and floor space indices have similar drawbacks in medium size Scottish towns. While these are normally highest in the core of the central area they level out rapidly as distance from the peak land value intersection increases and on the fringes of the central area factors other than the presence of central area land uses, for instance building type and size of street block, are more important in the calculation of plot ratios and floor space indices.

LAND USE

Delimitations using land use data have a major advantage over other methods in that it is land use that we are examining in central area studies and thus in these techniques we are using a direct measurement of the qualities being investigated. A further advantage is that while there is no centralised record of detailed land use, data is readily acquired by simple survey methods..

The availability of land use information has encouraged its use as the basis of a number of delimitation techniques, the more important of which are summarised below.

TEMPLATE METHOD

This method, which has been mainly used in North America, involves the preparation of a template with a circular hole of some four blocks in diameter. The template is moved out from the point of maximum accessibility and

the boundary drawn where less than 50 per cent of the land use is central in character. This method has two substantial drawbacks, the first being the difficulty in considering a three dimensional view of land use and the second the inability of this method to provide a definite boundary, a fringe zone being identified in most cases.

BREAK IN CONTINUITY

One of the more simple methods of delimitation is based on breaks in continuity of frontage of central area/ central business district land use. Once again the difficulty in taking a three dimensional approach to central area land use detracts from the value of this technique but probably the greatest problem of all is that of deciding just how large a break in continuity is required before the boundary is drawn. This method provides a number of points along the street frontages and these must be joined together using the same method in each town if the resulting areas are to be comparable.

FRINGE USES

A further method based on land use takes advantage of the fact that certain land uses which, for economic reasons, are unable to command a central site locate on the fringes of the central business district. The land uses which have been identified as seeking such locations in larger centres include car salerooms, furnishing shops, wallpaper stores, supermarkets, hospitals and guest houses. As in the case of the template method the study of fringe uses produces a transition zone rather than a definite boundary. A further problem is that in medium sized towns many of the land uses which have been identified as non-central

business district in character justify a central area location and while it is possible to identify some of these and other land uses as forming a fringe on the edge of the central area, these in no way encircle the central area and would not make the basis of a useful delimitation technique.

MURPHY AND VANCE S METHOD

Murphy and Vance[1] identified two types of land use, central land use and non-central land use, and their method was based on the presence and relative proportions of central land use to non-central land use. They considered the true central land uses to be retail shopping, services, offices and places of entertainment and non-central land uses to include private residences, hotels and guest houses, warehousing and wholesaling, churches, schools and industry. They did not consider Government uses as a true central business district land use but in a few cases such as the Post Office and the Federal Court Buildings they did recognise a need for a central location.

Murphy and Vance chose the street blocks as their basic unit of study and based their delimitation on two indices, the central business height index (CBHI), (the total floor area of central land use divided by the total ground floor area), and the central business intensity index (CBII), (the proportion of the total floor space in central land uses). For a block to be included in the central business district they decided that it must have a central business height index of at least 1, and a central business intensity index of over 50 per cent. By using both indices at the above subjectively defined levels they insured the degree of

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1. R.E.Murphy and J.E.Vance Jr., Op.Cit.

utilisation and concentration which they considered to be necessary for the inclusion of any block in the central area. In addition to meeting the required levels all the blocks had to form a contiguous group around the point of maximum accessibility, detached blocks not being considered as part of the central business district. In addition, blocks not reaching the required levels but surrounded by blocks which did, and blocks which were occupied by Government offices or the central post office and were adjacent to blocks meeting the required level, were included in the central business district.

STANDARDISED TECHNIQUE FOR CENTRAL AREA DELIMITATION

From the preceding discussion it will be clear that land use is considered the most suitable basis for a precise standardised delimitation technique. Of the techniques based on land use which have been evolved by other research workers, Murphy and Vance's method and the use of the break in continuity were the two which offered the best possibilities for use, either directly or in a modified form, in the present study. These two techniques have the following qualities:

a They are based on land use and are therefore a direct measure of central area qualities,

b the basic information can be readily assembled in a compatible form for all towns,

c the boundary is delimited in terms of a linear boundary, and

d strictly comparable areas can be defined for all towns.

As the break in continuity method appears to be a rapid method requiring no more than an inspection in the field, it was investigated first. It soon became apparent that the problem of deciding how large a break in continuity

was required before the boundary was drawn was extremely difficult in practice as either (a) a strict rule of "x" feet or "n" plots of non-central land use was used, in which case some areas which one would certainly wish to include in the central area, and which would have been included with the application of other methods, would be excluded, or (b) a subjective judgment would be necessary in each case of a break in continuity. It was not considered that in its present form the break in continuity method would delimit strictly comparable areas between towns.

The Murphy and Vance method is a more objective approach to the definition of the town centre and it was investigated to see if it would provide a more objective and accurate tool for delimitation. If the Murphy and Vance method could be used directly or with only slight modifications there would have been the additional advantage of comparison with other towns of different sizes and in different environments. In the event a strict comparison was not possible as the method used was substantially different from the Murphy and Vance method and the central areas defined in the present study of medium size towns were not the same as the central business districts defined in other studies.

The Murphy and Vance technique is based on a number of basic principles, all of which have at one time or another been challenged and which must be investigated in this study. These are:

a the definition of central land use;

b the use of the block as the basic spatial unit;

c the use of the central business height index and central business intensity index and the choice of values of 50 per cent for the central business intensity index and 1 for

the central business height index; and

d the requirement for a continuous central area.

a. The definition of central land use has been dealt with above and the range of activities which can justify a central area site in Scottish medium sized towns is appreciably wider than in the CBD of the larger American cities.

b. In most American cities studied by Murphy and Vance, indeed in the majority of American towns outside the western seaboard, the town centre is composed of a large number of small to medium sized rectangular street blocks. This regular pattern of blocks results in the central business district of larger towns and cities evolving in the shape of a quadrate cross with central land uses being present along the streets leading from the peak land value intersection and in many of the streets parallel to these. With small blocks and a fair degree of similarity of land use on all sides of the block, Murphy and Vance found that in most cases the block, a unit used by many planning departments for data storage purposes, was a satisfactory spatial unit for delimitation purposes.

The historical development of Scottish towns over many centuries has meant that street blocks have a wide variety of shapes and the longest block frontage may be as short as 20 yards or as long as 100 yards or even more. In a number of cases it is not possible to identify a street block, e.g. in Perth where a central area street frontage is backed by the North Inch or in Dunfermline where two street frontages are backed by the Dunfermline Glen. The large size of some Scottish street blocks and the much lower pressures for

a central site in the medium size town, often give a situation where one frontage of a block may be part of the main shopping street while the rear of the block has no central land uses whatsoever. In these cases the sides of the block often have central land uses only along part of the frontage, that nearest to the main shopping street.

The presence of a large number of blocks, part of which are clearly central in character and parts of which are just as clearly not, led the author to the conclusion that the block would not provide a suitable basic spatial unit for a delimitation technique for the towns being studied.

In considering alternative units the block frontage was one which had been used in previous studies and might have been useful in this study. While the block frontage was a distinct improvement on the block, it did not provide a satisfactory unit for delimitation purposes as in some of the larger frontages on the fringe of the central area, the use of this unit resulted either in a large section of non-central land use being included in the central area or some central area land uses being excluded. In either case it was felt that the central area thus delimited would not be strictly comparable with the central area defined in other towns and this would affect the results of any subsequent comparative study.

It quickly became apparent that the best alternative basic unit was the individual plot, the only unit below block or block frontage level which was clearly identifiable both on the ground and on large scale maps.

c. Murphy and Vance decided that a central business height index of one or more was required for a block to be considered central in character. Using only a height

index would have meant that intensity of use, one of the most important qualities of the central business district, was not given sufficient weight in the delimitation technique and too large an area might have been included as it would have been quite feasible for a multi-storey residential block with central area land use on the ground floor to be included in the central area, an undesirable situation in the view of Murphy and Vance. To ensure the degree of intensity of use which they considered typical of the central business district they decided that in addition to having a central business height index of 1, blocks must also have more than 50 per cent of their floorspace in central land use if they were to be included in the central area.

In Scotland's medium size towns, much of the building in the centre and its adjoining districts is three or four-storeys in height and while most of the floorspace in the main shopping streets is devoted to central land uses, in the peripheral areas, where a site within tolerable walking distance of the point of maximum accessibility can be obtained fairly readily, it is usual for central land uses to occupy only the ground floor. For most central area purposes, provided accommodation can be had at reasonable cost, a ground floor site with a street frontage is much more desirable than accommodation above ground level. In view of the fact that fairly central ground floor accommodation can be obtained at reasonable cost and there is therefore no need to have a high intensity of use in the periphery of the central area, it is not considered that the concept of a central business intensity index is valid in the delimitation of the central area of medium size towns in Scotland.

d. While the intensity index is not considered a valid concept in the delimitation of the central area, the

reason for this is the lack of overall demand for sites and not any doubt as to the desire of central land uses to be as close to the peak land value intersection as possible. The principle that the central area should be a continuous region is correct and should be applied in any technique developed.

Having investigated the previous attempts at delimitation, it was decided that the standardised delimitation technique to be used in this study should be based on land use, should take the individual plot as the basic spatial unit, should reflect the desire of central land uses to be as close to the point of maximum accessibility as practical in the light of the relative competing claims of these uses, and it should define comparable areas in all the towns being studied.

THE CENTRAL AREA DELIMITATION TECHNIQUE

After considering a number of alternative techniques which were in accordance with the above guidelines, that outlined below was chosen because it best defined the region which the author considered possessed the qualities of the Central Area of Central Scotland's medium sized towns.

The Central Area Delimitation Technique (CADT), as the method is henceforth called, is based on the proportion of floorspace in central area land use to total floorspace on the ground floor of the buildings, calculated on an individual plot basis. Because this proportion is similar to Murphy and Vance's Central Business Height Index but is used in the context of the Central Area rather than the Central Business District, it has been decided to call the value obtained from the calculation, the Central Area Height Index (CAHI). In plots where there are no buildings a value of 1 is given where it

is used for central area purposes e.g. a car park, and 0 where it is not so used.

The steps in the application of the CADT are:

1. Starting from the point of maximum accessibility and working outwards along each street frontage all contiguous plots with a CAHI of 1 or more are included in the Central Area. The value of 1 for the CAHI was chosen because (a) it indicated a continuous development of Central Area land use of one floor at least and (b) in practice it gave the best approximation to the area which possessed the qualities of the Central Area as defined above.

2. When a plot is reached with a CAHI of less than 1, a detailed study is initiated of land use from the start of that plot outwards from the point of maximum accessibility to see if on an accumulative basis, i.e. taking an average CAHI of plots from this point, the value rises to 1 or more.

3. If the CAHI rises to 1 or more when considering the plots beyond then the plot or plots with a value of less than 1 are included in the Central Area and the consideration of CAHI values continues from the point at which the average CAHI again rose to 1 until a further plot with a value of less than 1 is reached when a new detailed study is initiated.

4. If the CAHI does not rise to 1 or more after considering the plots beyond, then the Central Area boundary is drawn between the first plot with a value of less than 1 and the preceding plot.

5. After considering all frontages leading directly or indirectly from the point of maximum accessibility the

situation is reached where the boundary of the Central Area must be drawn and this is done as follows:

a Where all frontages in a block are considered to be Central Area in character then, provided the block is in a continuous development of Central Area land use, it is taken to be part of the Central Area.

b Where a block has all but one of its frontages fully within the Central Area then the whole of that block is considered part of the central area provided it is part of the continuously developed Central Area. In such cases the two end sections of the remaining frontage, the return frontages of the corner properties of adjacent streets, must be in the Central Area, while in all cases central area land use were present in other sections of the frontage.

c Where a block has one or more partial block frontages within the Central Area the points on the street delimited under 4 above are joined using the plot boundaries shown on the current 1/250 maps.

d The boundary is then drawn to include all blocks wholly within the Central Area, taking the centre of the street as the line of the boundary, and those parts of blocks identified in 5c,(above). Where a section of frontage or block which is not of a central area character is enclosed by central area land use it is considered to be part of the central area.

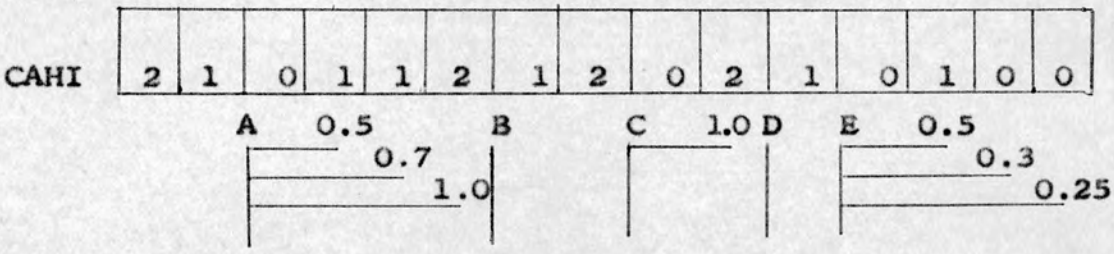
In practice this technique is fairly easy to apply as it requires only a detailed consideration of land use

in the fringes of the central area.

The following diagram illustrates the various steps in the application of the Central Area Delimitation Technique.

DIAGRAM 2.1

DEFINITION OF EXTENT OF STREET FRONTAGE WITHIN THE CENTRAL AREA



A. Central Area Height Index (CAHI) falls below 1 and detailed study initiated.

B.. Average CAHI rises to 1 and frontage to point B included in the central area.

C. CAHI falls below 1 so detailed study initiated.

D. Average CAHI rises to 1 and frontage up to point D included in the central area.

E. CAHI falls below 1 and does not rise to this level again. Point E marks the limit of the central area on this street frontage.

SECTION 2

HISTORICAL DEVELOPMENT AND PRESENT PHYSICAL FORM OF THE CENTRAL AREA

An understanding of past changes and the factors leading to these changes is basic to our appreciation of the present structure of any geographic region, and with this in mind it was decided that a consideration of past changes in the physical form and internal structure of the central area should be initiated.

As the historical analysis is only one section of a wider study and not, as could well have been possible, a complete study in itself, it has been necessary to restrict the field of study to those physical and economic aspects which would assist in the comprehension of the structure of the central area and the pressures causing change within it.

A range of alternative sources of historical data including old maps, street directories and valuation rolls was considered and it became apparent that the valuation rolls provided by far the best source as they contained a wealth of historical information about the individual valuation subjects throughout Scotland. Using this information, all central area land uses could be identified at the plot level, although not vertically within the plot, by major land use type i.e. whether a shop, office, warehouse etc. For each valuation subject the following information is available.

a Street number
b Class of subject, e.g. shop or office,
c owner's name and address,
d occupier's name and address, (in earlier volumes also occupation),

e gross annual value,
f rateable value.

Valuation rolls are available from 1865 but it was not until 1882 that street numbers were used in all the central areas chosen, and the choice of the earliest date for a survey, 1882, was chosen with this in view. As was mentioned in the introduction, 1912 and 1938 were chosen as representative of the pre-war and inter-war periods and, together with the earlier survey and the main 1966 land use survey, gave a sample coverage of the 84 years from 1882 to 1966.

The valuation roll information, when used in conjunction with Ordnance Survey maps of the same period, enabled the central area to be identified at 4 points in time and also gave a picture of the internal structure of the central area at each period. This work forms the basis of the historical review of the central areas.

Having identified the central area in 1882, 1912, 1938, 1966, it was possible to consider the form and structure at these dates and to observe the changes between them. Previous work[1] suggested that an understanding of these changes could best be had by looking at the factors encouraging change and the constraints to growth and this approach was followed, although the factors considered were modified to suit the circumstances of medium size Scottish towns in the light of the experience gained in the study.

The factors encouraging change which were studied were:

a the changing functions of the central area,
b population growth and the increased flow of potential customers,

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1. R.E.Murphy and J.E.Vance Jr., Op.Cit.

c the location of bus and rail termini, and
d house type.

The constraints to growth which were studied were of two types,

a physical constraints, e.g. topography, rivers and sea, and
b social constraints, e.g. industry, railways and public parks.

In this historical analysis, it was felt that, because of the strong inter-relationship of the factors influencing change, it would be best to consider the towns individually initially and then to draw general conclusions at the end of the Section. In order that the changes in the form and structure of the central area can be seen against the background of the social and economic changes in the town as a whole, a brief historical introduction to each of the towns is included at the start of each town study.

HISTORICAL GROWTH OF DUNFERMLINE'S CENTRAL AREA

Dunfermline: Situation and Historical Growth (Map 2.1)

The old town of Dunfermline is situated on an ice moulded ridge 4 miles north of the Firth of Forth. While the town is the focus of a dense local road net, it is not a major route centre nor on an important through route. With the opening of the Forth Road Bridge, the town is now within 20 minutes car journey of Edinburgh, while Glasgow and Perth are less than an hour away.

Dunfermline's early development can be related to its status as the administrative and religious capital of Scotland, a position it held for some time during and after Malcolm Canmore's reign in the 11 th century. The later development and prosperity of the town was much more related to the growth of industry, especially

textiles, coal-mining and ship repairing during and since the Industrial Revolution.

The earliest industry to develop was the manufacture of linen, and much of the 18th and 19th century growth can be related to the expansion of this industry. A substantial increase in population during the latter half of the 19th and the first decade of the 20th century (see Table 2.1) was caused by the expansion of the linen industry and the opening of the West Fife Coal Field which drew much of its labour from the Dunfermline areas.

In 1911, the Naval Dockyard was constructed at Rosyth and a housing scheme built nearby. The growth of employment resulting from this development, although partly offset by a decline in mining and linen manufacture, gave further substantial population growth in the 1911 to 1931 period, a growth unsurpassed by any of the other towns in this period.

Since 1931 Dunfermline has continued to grow at a faster rate than any of the other towns studied. This growth has been based on a steadily expanding employment, both in the Dockyard, which has become the repair yard for the British Nuclear Fleet, and in the new "growth" industries attracted to the industrial estates created by the Town Council. The growth in these industries has more than offset declines in textiles and mining and future expansion of employment is forecast to result in a 1980 population of 70,000.

Although Dunfermline is primarily an industrial town, industry does not dominate its economy as Table 2.2 shows. The town, being situated in a densely peopled agricultural and mining region, has developed as an

TABLE 2.1.

HISTORICAL GROWTH OF POPULATION

Burgh	1841	1881	1911	1931	1951	1966
Dunfermline	7865	19915	28103	35058	44719	50138
Falkirk	8209	13170	33574	36566	37535	37767
Ayr	9115	20987	22986	36783	42377	46475
Hamilton	8810	18517	38644	37862	40174	45554
Stirling	8307	16012	21200	22593	26962	28015
Kilmarnock	17846	25844	35747	38100	42123	47964
Kirkcaldy	4785	23315	39601	43874	49050	51935
Perth	12616	26982	35854	34807	40487	41296

Source: Registrar General for Scotland; 1966 Census.

TABLE 2.2.

EMPLOYMENT 1965

	Order	Ayr	Dunfermline	Falkirk	Hamilton	Kilmarnock	Kirkcaldy	Perth	Stirling
Total Male Employment		1391	1735	1580	1003	1604	1392	1323	863
Total Female Employment		886	686	683	670	843	823	801	590
Total Employment		2257	2421	2263	1673	2447	2215	2124	1453
Industry									
Agriculture, Forestry and Fishing	1	30	17	6	10	16	18	23	17
Mining and Quarrying	2	6	11	7	2	3	46	4	10
Food, Drink and Tobacco	3	32	36	42	8	93	71	121	88
Chemist and allied Industries	4	25	2	39	-	4	1	14	3
Metal Manufacture	5	67	8	799	16	5	33	1	-
Engineering and Electricity Goods	6	115	18	35	254	438	29	21	22
Shipbuilding and Marine Engineering	7	8	560	-	-	-	4	-	-
Vehicles	8	19	9	57	10	32	10	24	5
Other Metal Goods	9	76	6	46	111	19	9	10	3
Textiles	10	144	148	4	68	338	122	30	37
Leather, Leather Goods, Fur etc	11	8	-	-	-	6	-	-	-
Clothing and Footwear	12	7	17	-	9	142	-	2	1
Bricks, Pottery, Glass, Cement, etc	13	2	17	48	6	72	3	17	14
Timber, Furniture	14	31	14	36	7	24	38	3	23
Paper, Printing, Publishing	15	17	16	51	11	25	43	49	17
Other Manufacturing Industries	16	-	7	2	1	5	414	2	27
	1-16	587	886	1172	513	1222	841	331	267
Construction	17	181	185	173	140	169	170	204	109
Gas, Electricity, Water	18	21	63	47	87	87	22	58	48
Transport and Communications	19	253	149	147	143	201	154	267	123
Distributive Trades	20	455	337	304	263	314	386	419	269
Wholesale Distribution		38	33	28	20	22	58	57	13
Retail Distribution		391	292	268	226	270	307	323	233
Insurance, Banking, Finance	21	60	37	31	41	37	28	118	41
Prof. and Scientific Services	22	236	166	146	164	159	236	236	179
Miscellaneous Services	23	292	152	167	130	169	257	309	178
Public Administration and Defence	24	168	445	75	189	86	111	174	237
National Government Service		44	379	27	37	29	26	96	145
Local Government Service		124	64	48	152	54	85	78	92
Industry not given	-	4	1	1	3	4	10	8	1
	19-24	1464	1286	870	930	966	1172	1523	1028

(Figures in 10s)

important market and distribution centre for south west Fife and the proportion of the economically active population employed in the various service industries is above the average for towns of a similar size. Industry in general, however, and the Naval Dockyard and its associated naval base in particular, have a large influence on the economic and social character of Dunfermline.

LOCATION OF THE CENTRAL AREA (Map 2.2)

Dunfermline's central area is located within the heart of the old town and is focussed on the High Street, the main east-west route through the burgh. The main directions of urban growth have been to the south and east of the central area and there has been almost no post 1882 building to the west, due in particular to the topographical difficulties presented by Dunfermline Glen and partly to the presence of Pittencrieff Park. In comparison with towns of similar size, Dunfermline central area is at a much greater average distance from its immediate catchment population than normal, as some 18,000 of the town's population lives in the physically separate community of Rosyth, while most of the post-war building in the town itself is at some considerable distance from the town centre.

The burgh's central area has become increasingly less central in relation to the total population but it is still the most accessible location within the burgh and no major suburban shopping centres have developed, although 2 district centres of greater than average size are to be found in Rosyth and in the new housing development to the south-east of the town centre. The town centre is on a physically difficult site with a particularly steep slope to the south of the High Street.

There are few level sites in the whole of the central area.

PHYSICAL GROWTH OF THE CENTRAL AREA (Map 2.3)

In 1882 the central area was very much linear in form with the High Street and its continuation into Bridge Street and Chalmers Street in the west, and East Port in the east being the main focus of the area. Guildhall Street, the major street leading into the central area from the large population concentrations to the south, was the only street leading from the central area to have been developed extensively, although central area land uses had moved into parts of the 2 parallel streets of Maygate to the south and Queen Anne Street to the north. Between 1882 and 1912 the major extensions of the central area were to be found to the north of the High Street, in Queen Anne Street, Pilmuir Street and Inglis Street, and in the East Port in the east, while lesser extensions were to be found in Chalmers Street and in the south.

During the following period to 1938 the central area expanded modestly with further growth taking place in the north and in the East Port and expansion to the south again being of a lesser nature.

The final period to 1966 again saw only modest central area growth with the most significant area being to the south in Canmore Street.

CENTRAL AREA GROWTH AND URBAN GROWTH (Maps 2.3 and 2.4)

In 1882, Dunfermline central area was fairly centrally located within the built-up area although the linear east-west form of the central area was somewhat at odds

with the population distribution which was in general concentrated to the north and south of the town centre.

1882 to 1912 saw only modest expansion of the built-up area, very largely concentrated to the north-west and west, in those areas which drain into the central area by way of Pilmuir Street and East Port, the streets which were in the direction of the most significant growth in this period.

The following 26 years saw a marked change in the direction of urban expansion and while there was some continued growth in the north-west and west, the main concentration was to the south both in Dunfermline and Rosyth. There was expansion in the East Port to match the continued expansion of the town in that direction but no growth to the south, the direction of most rapid residential development.

The final 28 years saw substantial growth of population mostly to the south of the central area. There was little growth in the central area during this period but what there was was mainly concentrated in the south.

PHYSICAL AND SOCIAL CONSTRAINT TO GROWTH (Map.2.5)

Relief constraints have played a significant role in restricting Dunfermline central area growth. Map 2.5 shows the 2 main areas of steep slope to be on the south of the ridge on which the town developed and in the Valley of the Tower Burn. Despite the fact that most of the residential expansion has been to the south of the central area, expansion in that direction has been slight and this is to a large degree associated with the extremely sharp slope to the south of High Street which has been and still is a major deterrent

to pedestrian traffic moving in that direction. The Tower Burn runs through a steep sided valley which has restricted growth in the north west. In recent years however this has been filled in, levelled and developed as a car park so becoming an integral part of the central area rather than a constraint to growth as it was in the past.

Social constraints to expansion are to be found in the open space of the Pittencrieff Glen to the south west and the Public Park to the south east and in the industry and railway land to the north. While these social constraints have had a local influence on the growth of the central area, their influence has been secondary to that of the physical constraint of steep slopes. The physical and social constraints together almost completely encircles the central area as defined at present (see Map 2.5) and further growth is limited, particular to the west.

FACTORS FAVOURABLE TO GROWTH (Map 2.6)

Due to the physical site characteristics of Dunfermline's central area, the town's two railway stations are located at some distance from the core of the central area. The Upper Station, located to the north-east of the central area is the most convenient for shoppers travelling by rail, but the location of the railway station does not appear to have had much of an influence on the direction of growth of the central area.

The two bus stations on the other hand, although also located on the periphery of the central area, are closer to the core and do appear to have had some influence in drawing the central area in their direction. The Upper Bus Station to the north of the central area,

serves the town and services in the north half of its hinterland. One of the more important directions of growth has been towards this bus station and the land uses located in this area, hairdressers, restaurants, convenience goods and services gain significantly from the pedestrian movement between the bus station and the High Street. The Lower Bus Station, the terminus for buses from Rosyth and the southern half of the town's hinterland, has had a similar but much less significant influence on central area growth.

Map 2.6 shows the areas of housing suitable for office conversion and it can be seen that there is a strong relationship between the recent expansion of the central area and the 2 such areas which have attracted development to their periphery in recent years.

GROWTH IN THE CENTRAL AREA IN RELATION TO CHANGES IN CENTRAL AREA LAND USE

There were 245 shops in the central area in 1882 and retailing was by far the most important land use at that time. There were only 25 offices in Dunfermline and office use was less significant than in most of the other towns at this date.

In the following 30 years the number of shops and offices increased substantially to 297 and 88 respectively. The major physical expansion to the north in Pilmuir Street and Inglis Street was for mixed central area uses, among which the Post Office, picture house, opera house, swimming pool and public halls were the main land uses. While retailing did expand in this area it was a secondary factor in the growth. The other significant expansions in the north, in Bruce Street and Chalmers Street, were very largely for additional retail space.

Substantial expansions in the East Port and the New Row were a result of a major growth of office use in the east of the central area, both within the existing region, and in the areas which were assimilated at this time.

1912 to 1938 saw further growth in the number of shops and offices, to 323 and 117 respectively, and a continued eastward expansion of the central area as the most noticeable feature with growth in this area being for both additional office and retailing floor space. The further modest expansions to the north in Bruce Street, Chapel Street and Carnegie Street were again for mixed uses including retailing, a billiard saloon, a meeting hall and a church. The modest expansions to the south were to accommodate a few additional shops, some offices and a garage.

1938 to 1966 saw a sharp fall in the number of shops and a modest increase in the number of offices. The only significant area of growth was in the south where office uses expanded appreciably. The lesser area of assimilation in Carnegie Street to the north was for land uses at least in part associated with the bus station located in that district.

CONCLUSIONS

There has been a continuous expansion in Dunfermline's central area since 1882 but in the post-1912 era growth has been of a modest nature. The basic linear form of the central area has been retained throughout and although there has been some expansion back from the High Street, retailing has remained heavily concentrated on the frontages of the main east-west route and it has been the introduction of other land uses,

unable to command high value sites, which have been the primary reason for the development behind the main street.

Much of the expansion of the central area between 1882 and 1912 was for the extension of community facilities and in Dunfermline's case the growth of retailing was not the dominant factor in central area growth in the first 30 years. There was a marked expansion of the central area for office use and the development of such a peripheral office district began much earlier in Dunfermline than was the case in the other centres. During this period the main directions of urban growth were also those in which the most significant central area expansions were to be found.

1912 to 1938 saw substantial urban growth south of the central area but no major consequential growth of the central area itself. Once again retailing was not a dominant factor in the assimilation of new areas in which a wide range of uses were present. The lack of growth to the south may have been the result of a number of factors, of which the extremely sharp slope to the south of the High Street, limited demand for additional retailing floor space and the fact that a large proportion of the additional population were at some distance from the central area and travelled by bus to shop, were the most important.

The final period again saw marked urban growth in the south and in this period the main area of assimilation was also in this direction. A co-incidence in the direction of major growth may well, however, have been circumstantial as the southern expansion of the central area was primarily for office use and the attraction was the availability of suitable housing and not the volume of persons entering the central area from that

direction. There was little growth of retailing and services and no obvious pressure for growth towards the south. It is likely however that what pressure there was, was counterbalanced by the factors limiting southward expansion noted above.

As would be expected, growth of the central area appears to have been influenced by a variety of both pull and push factors, although it is difficult to identify any one dominant factor, the physical constraint of relief appears to have been most powerful, particularly in restricting expansion to the south. While the direction of residential growth and central area expansion coincide in the earlier period, there is little evidence of such a connection since 1912. Neither bus nor rail termini have had a major influence on the direction of growth, but of the two, bus termini have had the greater effect.

HISTORICAL GROWTH OF FALKIRK CENTRAL AREA

Falkirk: Situation and Historical Growth (Map 2.1)

Map 2.1 shows Falkirk's position in the Forth Valley, midway between Edinburgh and Glasgow and 15 miles from Stirling. The town's position and its good road, rail, sea and canal communications have been important in its historical growth and will be vital in the expansion forecast for the Falkirk region during the next few years. Its location on the Forth and Clyde Canal, built in the late 18th century, was particularly important in its earlier industrial growth, while the proximity of the Grangemouth Docks is as important in the town's recent industrial expansion.

As with several other towns studied in this thesis, the growth of Falkirk is strongly tied to the industrial revolution and the industries introduced then and since. Prior to the late 18th century, Falkirk had a very important Tryst, an agricultural market, which was famous throughout Britain, but it was the opening of the Carron Foundry in 1758 and the further development of the iron industry, following the construction of the canal, which initiated the town's rapid growth during the 19th and early 20th century (see Table 2.1). During this period a large number of firms, manufacturing mainly heavy industrial products, located themselves and developed in the town and its hinterland. A rate of growth well above the average for the towns being studied enabled Falkirk to rise from being by far the smallest of the towns being studied in 1882 to a position in the middle of the range in 1912, the population rising in this period from 13,170 to 33,574. Although there has been a serious decline in the heavy industries in recent years, this has been more than offset by the introduction of a variety of new industries,

much of it light industry employing a high proportion of female labour, and a more modest rise in employment has allowed the town to expand to 36,566 in 1931 and 37,767 in 1966. Industry is the main source of employment in the burgh, as can be seen in Table 2.2, and plays an important part in its economy.

Development within Falkirk's hinterland, particularly around the port and petro-chemical industry at Grangemouth, has encouraged the growth of the town's shopping centre where in 1966 renewal was further ahead than in any other town of comparable size in Scotland. These improvements have strengthened the town centre's attraction as a retailing centre.

The close proximity of Stirling, the county town, has given Falkirk a very low proportion of its labour force in Government employment, particularly in county and national Government services. Expansion of the Technical College and the opening of the new Callendar Park Teacher Training College, together with the expansion of service activities, have diversified the town's employment structure to some extent but Falkirk is still essentially an industrial centre and is likely to remain so in the future.

LOCATION OF THE CENTRAL AREA (Map 2.7)

Falkirk's central area was established and has expanded in the heart of the old town. High Street, the main shopping street, runs in an east-west direction on the crest of an ice moulded ridge, the south side of which is particularly steep. Adverse topography and land ownership have acted as a constraint to the eastern and south eastern extension of the town with the result that urban growth has been concentrated in the north and

west. While the central area has become increasingly less central in physical terms it has continued as the focus of the town in regional road network and of the economic and social life of the burgh.

PHYSICAL GROWTH OF THE CENTRAL AREA (Map 2.8)

Although High Street was the main shopping street in 1882, central area land use was also strongly represented in New Market Street, Kirk Wynd, Vicker Street, Wooler Street and Manor Street. The shape of the central area is different from that of most of the other towns studied in that it was linear in form but had a complementary although secondary street parallel to the main shopping street.

Between 1882 and 1912 the main extension of central area land use was to the north in Vicker Street and neighbouring streets and to a lesser extent in Manor Street. The central area's shape at the end of this period was very similar to that at the beginning but there were distinct signs of expansion to the north along the main street leading into the central area from that direction.

The most marked features of the 1912 to 1938 period were further growth to the north, particularly noticeable in Vicker Street, and the extension of central area land uses within blocks already partly in the central area, especially in the north-east. Significant growth was also to be seen in the east in High Street and to the south along Cow Wynd. By 1938 the central area was basically T-shaped with High Street being the major axis of the central area but Vicker Street becoming an increasingly important secondary axis.

The last period of study to 1966 saw numerous small extensions of the central area and one substantial extension to the west of the central area in West Bridge Street. The form of the region remained T-shaped.

CENTRAL AREA GROWTH AND URBAN GROWTH (Maps 2.8 and 2.9)

The reasons for the atypical form of Falkirk's central area in 1882, a main shopping street with a parallel secondary street, is worth some consideration before we proceed to look at the growth from that date. The age of the buildings in New Market Street, the secondary street, indicate that it was developed during the latter half of the 19th century, & in many cases in the form of purpose-built commercial buildings. This extension to the north was probably the result of a number of causes, among which the more important were the major physical constraint to expansion to the south of the High Street and the lesser physical constraint to the west of which more is said below, and the fact that most of the urban growth was to the north.

From 1882 to 1912 there was a substantial growth in population, namely to the north beyond Grahamston and to the west in the Camelon area of the town with some lesser growth to the south in the Parkfoot district. As was noted above the major growth in the central area was to the north in a similar direction to the major urban growth.

1912 to 1938 saw further substantial growth in the north beyond Grahamston and to the east. The major central area growth in this period was to the north in the direction of the main urban growth but the expansion of central land uses to the west is not related to population growth in that direction. The extension of the

central area to the south in Cow Wynd is similarly unrelated to any simultaneous urban expansion in that direction but could be a delayed effect of expansion to the south in the previous period.

The final period to 1966 saw major urban growth to the west and north and lesser growth in all other directions except the south-east. During the same time there was only one major expansion of the central area, to the west, but as will be seen below this was more due to the availability of land than a reflection of urban growth.

PHYSICAL AND SOCIAL CONSTRAINTS TO GROWTH (Map 2.10)

Relief is the only physical feature which has been a major constraint to the growth of Falkirk's town centre. Map 2.10 shows 2 areas of steep slope to the south and south-west of the central area and these appear to have greatly restricted expansion of the central area during the period of study. It is difficult to assess just how strong a constraint these areas of steep slope have been as there has been only limited urban expansion to the south and probably no extreme pressures for expansion in that direction. It is interesting to note, however, that of the 2 main streets moving into the central area from the south, Cow Wynd and Cockburn Street, the former, which offers no major physical constraints, has been developed for central area land uses whereas the latter has not. The steep slope to the west of the High Street has probably had more influence in central area expansion as there would probably have been substantial pressures for growth in that direction because of the major housing developments to the west.

The industrial land to the north-west of the central area, largely devoted to brewing, has throughout the

years been a constraint to the westward expansion of the central area, particularly for retailing and services. In recent years office development has taken place beyond the industrial zone and since the survey was completed, the industrial buildings have been cleared and the site is currently being used for car parking and part at least is to be developed for a large retail unit.

The railway line to the north has not been significant in restricting central area growth except possibly in the most recent period, while industrial land to the south-west has been similarly of minor significance.

FACTORS FAVOURABLE TO GROWTH (Map 2.11)

Falkirk/Grahamston railway station is located on the northern fringe of the central area in the direction of most active central area expansion. It seems likely however, that while the location of the railway station and the flow of pedestrians created by it played some part in drawing the central area northwards, this was by no means the primary reason for growth in that direction.

Expansion of the central area to the east between 1912 and 1938 is in part a direct result of the choice of Calendar Riggs as the site for the new bus station as a suite of shops were integrated with the bus station when it was built and some service activities, partly attracted by the increased flow of pedestrians, have been attracted to nearby premises.

Areas suitable for office development were to be found to the north-east, north-west and to the south but it was only to the north-west that offices had been introduced in any scale and here it has been very largely an

expansion of local government offices. The lack of development of these areas for offices was partly a reflection of the low level of demand for office space in the town and partly a reflection of availability of suitable premises, some purpose-built, in the New Market Street/Vicker Street area.

GROWTH IN THE CENTRAL AREA IN RELATION TO CHANGES IN CENTRAL AREA LAND USE

As in the other towns investigated in this thesis, retailing was by far the most important land use in the central area in 1882 and, while other land uses were present, the extent of the central area was very much related to the extent of retailing. The few offices which were present were scattered in various parts of the central area although there was a slight tendency for concentration in the middle of the High Street.

1882 to 1912 saw a very rapid build-up in the number of shops, from 226 to 334, the fastest growth of the 8 towns in this period, and Falkirk rose from having almost the least number of shops to a more central position, (see graph 2.1). The physical expansion of the central area in this period was very strongly concentrated to the north of the central area and was associated with the extension of retailing and a marked growth in the number of offices located in Vicker Street, New Market Street, the local government office centre, and Manor Street. The number of offices rose from 31 to 92 during this period.

There was only modest growth in the number of shops and offices between 1912 and 1938 and a wide variety of other central land uses were responsible for the movement into the areas assimilated into the central area.

Retailing was the main use present along the main pedestrian and traffic streets such as Vicker Street, Cow Wynd and East Bridge Street while garages, wholesaling, theatres and local government offices and other facilities, such as public baths, were present in the other streets and more especially in the less expensive sites. The modest increase in the number of commercial offices in the central area was contained within the existing central office area.

1938 to 1966 saw a decline in the number of shops and a further modest increase in the number of offices. The major extension of the central area to the west since 1938, a very recent development, has been very largely the result of the re-location of the Municipal Offices from New Market Street to a new site in West Bridge Street and the extension of offices in Hope Street. While there has been substantial redevelopment of retailing facilities within the existing shopping area, there has been little assimilation for retailing purposes other than in Graham Street. The small extensions of the central area in other directions were due to the extension of other central land uses such as wholesaling and car parking.

CONCLUSIONS

Falkirk's central area has grown substantially during the past 90 years with a particularly marked expansion in the 1912 to 1938 period and only modest growth since. The major direction of growth has been to the north of the High Street along the axis of Vicker Street and this has altered the shape of the central area from being basically linear to more of a T-shape.

The linear form of the central area in 1882 was largely a reflection of the physical site and the orientation of the main through route in an east-west direction along the crest of the ridge on which the town is located. The marked expansion of the town centre to the north between 1882 and 1938, mainly for additional retailing floor space, can be seen as a consequence of a number of factors among which the more important were the physical expansion of the town in that direction and the physical constraints to expansion of the central area in other directions. Since 1938, the main area of assimilation has been to the west and has been seen to be more related to the availability of buildings and sites suitable for the development of offices rather than a response to any other push or pull factors.

There have, therefore, been 2 main phases in the expansion of Falkirk's central area since 1882. The first phase up to 1938 was one of substantial central area expansion, much of it for additional retailing floor space, and during this phase the direction of urban growth and the location of transportation termini played an important role in the direction of growth. In the second, post 1938, phase the main expansion was for additional office floor space and the direction of growth was largely dependent on the availability of suitable buildings and sites.

HISTORICAL GROWTH OF HAMILTON CENTRAL AREA

Hamilton: Situation and Historical Growth (Map 2.1)

Hamilton is situated in the Clyde Valley, 11 miles upstream from Glasgow and 2 miles across the valley from Motherwell. The town has grown up on the higher undulating ground to the west of the Clyde flood plain.

Being located at the crossing point of the Glasgow-Carlisle and Edinburgh-Ayr Roads, the town is an important route centre with very heavy through traffic, particularly on the main road south. Although an early local market town, Hamilton was neither an administrative nor a religious centre and the town's early growth was slow. The manufacture of lace and textiles gave an early start to industrial expansion, but it was the opening of the Lanarkshire coalfield which stimulated the rapid rise in population in the late 19th and early 20th centuries. The town increased by over 20,000, more than doubling its population, between 1881 and 1911. Over 40 pits were sunk in and around the town and the first statistical account states that during this period, almost the entire population of the burgh derived its income directly or indirectly from the mining industry. Unlike most of the surrounding centres, no major iron and steel industry was located in Hamilton during this period. As the coal faces became exhausted and mining declined in its hinterland, the town suffered severe unemployment, and, with the resultant migration being particularly serious during the late 1920s and early 1930s, the population declined slightly between 1911 and 1931.

Since the War, Hamilton has adopted an entirely new character. With the last pit in the area closing in 1947, from being a predominantly mining industrial centre, the town has re-asserted itself as an important

commercial centre for much of west central Lanarkshire and is the administrative centre for the most densely peopled county in Scotland, Hamilton being the location of the County Offices and being the County seat in all but name. From having a population of almost 38,000 in 1931, the burgh's population has risen to 45,500 and is still rising.

Table 2.2 shows that Hamilton has a substantial proportion of its economically active population in all the service activities and a particularly high proportion in Government administration. The table also shows that the burgh provides a considerable number of jobs in industry, this being the result of the introduction of a wide range of light industries since the War,e.g. electrical goods and carpet manufacture, both of which are major employers. A point to note is that an unusually large number of Hamilton's residents work outside the town, in Glasgow and in the nearby industrial centres, especially Motherwell and Wishaw.

Hamilton has a broad based economy with commerce, administration and industry all being well represented, with the result that the town has a well balanced social structure.

LOCATION OF THE CENTRAL AREA (Map 2.12)

Hamilton's central area, which is situated in the heart of the old town, has grown up around Hamilton Cross, the point at which the main route from Glasgow to the south meets the main east-west route, utilising one of the early crossing points of the Clyde. The town grew up on the river terraces immediately above the flood plain and, with growth to the east restricted by flooding and growth to the south by the Valley of the

Avon and its tributaries, as the built-up area expanded the central area became increasingly located off-centre in relation to the main population concentration. Although the central area has become progressively more off-centre geographically, it has maintained its accessibility to the whole town and is still by far the most accessible location for the total population of the burgh and its hinterland.

PHYSICAL GROWTH OF THE CENTRAL AREA (Map 2.13)

In 1882 the central area was fairly compact with retail frontages along the 5 streets leading from Hamilton Cross. The principal streets were Quarry Street to the south-west and Cadzow Street to the north-west while the extension into Keith Street to the north-east was of a minor nature. The central area at this time had a modified cross shape.

1882-1912 saw a substantial expansion of the central area, very largely to the south-west in Quarry Street but also to the west into the area between Quarry Street and Cadzow Street, in particular along the line of Campbell Street and Chapel Street. At the same time, there were smaller but significant extensions of central area land uses in Cadzow Street, Brandon Street and Townhead Street. While the modified cross remained the basic shape of the central area, Quarry Street became the principal retailing street with Cadzow Street becoming an important but secondary street.

The period between 1912 and 1938 saw only very modest central area growth with small extensions of central area land uses in Cadzow Street, Quarry Street and Lamb Street and on a slightly more significant scale in Townhead Street.

Since 1938 the only substantial extension of the central area has been to the north-west in Cadzow Street. Although there has been growth in other parts of the central area this has been on a modest scale, largely bringing into the central area the land behind the main shopping frontages or adjacent with them. Between 1938 and 1966, the central area in Townhead Street contracted slightly leaving a small area of discard on the south-west side of the street. By 1966 the shape of the central area had become more of an L shape than the cross noted in earlier years.

CENTRAL AREA GROWTH AND URBAN GROWTH (Map 2.13 and 2.14)

The shape of the central area at the first survey date strongly reflected the distribution of population in relation to Hamilton Cross. The 2 main shopping streets, Cadzow Street and Quarry Street, were the streets along which the heaviest pedestrian flows were found and they lead from the main population concentrations, while the lesser extension in Keith Street reflected the very small population living in that direction.

The main growth in population between 1882 and 1912 was to the west of the town, to the south-west at Low Waters and in particular to the north-west at Stonefield, Greenfield and High Blantyre. In this period the growth of the central area was also to the west but while the main population expansion was to the north-west, the major extension of the central area was to the south-west in Quarry Street.

1912-1938 saw considerable urban growth on the west of the town, both to the north-west and the south-west. The central area, on the other hand, expanded very

slightly and the most significant expansion was to the south-east, a direction in which there was no appreciable urban growth.

The westerly direction of urban expansion continued through to the post 1938 period. There was substantial growth to the north-west in High Blantyre and Stonefield, south of Greenfield in the west, and to the south-west at Laighstonehall and Fairhill. At this time the main extension of the central area was to the north-west in Cadzow Street.

PHYSICAL AND SOCIAL CONSTRAINTS TO GROWTH (Map 2.15)

The major physical constraints to the growth of Hamilton's central area have been the steep slope of the edge of the river terrace and the flood plain below and the valley of the Cadzow Burn. As the eastern boundary of the central area corresponds closely to the line of the edge of the terrace, it is difficult to assess how much of a constraint this has been as the pressure for expansion in an easterly direction, because of the direction of urban growth noted above, may never have been strong. Due to the close proximity of the point of maximum accessibility to the eastern boundary one would have expected however that more expansion would have taken place in that direction than in fact has occurred. While there may be some doubt as to the influence of the steep slope of the river terrace, there can be no doubt that, in the earlier years, the valley of the Cadzow Burn played a major role in restricting the expansion of the central area to the north-west, while in more recent times the valley has influenced the type of expansion. The steep sided valley is over 100 yards wide at Cadzow Street and up to 1882 expansion of the central area was limited by the major

break in potential retail frontage caused by this gap. Between 1882 and 1912, when one might have expected expansion of shopping to the north-west, the Valley continued to act as a barrier. The effect of this constraint to expansion of the main route into the central area from the north-west could well account for the appreciable growth of central area land uses in Chapel Street and Campbell Street during this period.

The only social constraint to the expansion of the central area is the railway which passes under Quarry Street. The railway yard and railway station on the west side of Quarry Street create a gap in the shopping frontage of some 150 yards while the gap caused by the railway to the east of Quarry Street is very much less. While central area land uses have jumped this gap, there is no doubt that the break in retail frontage of this scale has had a marked effect on the extension of the central area, particularly as far as the better quality shops are concerned.

FACTORS FAVOURABLE TO GROWTH (Map 2.16)

The railway station and the local bus station located nearby are situated in Quarry Street to the south-west of New Cross and as they are within the core of the central area, it is not possible to identify any effect they have had on the physical expansion of the central area.

There is a very strong relationship between the area of housing suitable for office development and the direction of post 1938 expansion of the central area for office use. The only area of such housing contiguous with the central area is to the north-west in Cadzow

Street and it is in this area that the recent expansion of offices has taken place.

GROWTH OF THE CENTRAL AREA IN RELATION TO CHANGES IN CENTRAL AREA LAND USE.

In 1882 the central area was very largely devoted to retailing, the dominant land use along all of the streets leading from Hamilton Cross. The extensions of the central area between 1882 and 1912 were primarily for additional retail frontage, the number of shops having risen from 256 in 1882 to 320 in 1912, but a significant number of other central area land uses increased in number or were introduced into the central area for the first time. The number of offices more than doubled from 23 to 59 with most of the additional offices being concentrated in Cadzow Street and the extension of the central area across the valley of the Cadzow Burn where there was the development of office and local government uses. In the east, particularly in Castle Street, there was a decline in the number of shops with an increase in the number of other central area land uses, including 3 picture houses.

Between 1912 and 1938 the growth of the central area in Cadzow Street was due to the further extension of office and local government uses, while the extensions in Quarry Street and Townhead Street were for retailing. There was a continued increase in the number of places of entertainment within the central area including another picture house, a dance hall, a billiard hall, a masonic hall and a drill hall and also additional garages. Most of these activities were established in locations peripheral to the main retail frontage.

The growth of the central area since 1938 has been

marked by the substantial expansion of office uses in the north of Cadzow Street, a large proportion of the town's additional offices being located in this area, and by the increasing peripheral provision made for the motor car with additional car parking, garage facilities and retail outlets for motor car accessories.

CONCLUSIONS

Hamilton's central area has expanded throughout the period of study with the years from 1882 to 1912 being those of most rapid growth. Whereas additional retailing floor space was the primary reason for expansion in the earlier period, office uses, primarily concentrated in the north of Cadzow Street, and other non-retailing land uses, located on cheaper sites close to the main retail frontages, have given rise to the main growth since 1912.

The major influence on the development of Hamilton's central area has been its location on the edge of the river terrace. With the flood plain being unsuitable for expansion of the built-up area, the town's growth has been almost wholly to the west and the central area's location has become increasingly eccentric. With almost all the growth in population being to the north-west and south-west, pedestrian and vehicular flows into the central area have become increasingly concentrated on Quarry Street and Cadzow Street and this has resulted in the major extensions of the central area being in these streets and also the contraction of central area land use in the east.

Two lesser but still important influences on the development of the central area were (a) the steep slope of the river terrace, especially where it blends into the

valley of the Cadzow Burn, and (b) the availability of housing suitable for office development in the north of Cadzow Street. The major break in the retail frontage of Cadzow Street caused by the valley of the Cadzow Burn, has effectively stopped the extension of retail uses into the north-west throughout the period of study and has resulted in the intense use of the land between Cadzow Street and Quarry Street for central area land uses from an early date. The central area has, however, extended across the valley since 1882 mainly due to the presence of housing and sites suitable for office development and the pressure for such development from within the central area.

With no important social constraints to expansion and relief playing only a minor role, the direction of urban growth relative to the location of the central area can be seen to have been the major influence on the development of Hamilton's central area.

HISTORICAL GROWTH OF AYR CENTRAL AREA

Ayr: Situation and Historical Growth (Map 2.1)

Ayr, while being an important commercial and administrative centre, is primarily a holiday resort, the largest and most comprehensive on the west coast of Scotland. The town's mild climate and the presence of 3 miles of sandy beaches within easy reach, together with its accessibility from Glasgow, have attracted holidaymakers in increasing numbers since the increase in popularity of sea bathing in the late 18th century. In addition to being a holiday resort, Ayr is also a tourist centre, due in large part to its associations with Robert Burns. The holiday and tourist trade, estimated to be £1.5m annually, has had a great bearing on Ayr's character, as seen in the large number of hotels and boarding houses, the first class entertainment facilities, and the high proportion of the town's labour force in tertiary services (see Table 2.2). This last feature is also related to Ayr's importance as a commercial and administrative centre as noted above. Being the county town of Ayrshire, it has a particularly large number of its workers in government and other office services, 7.4 per cent and 13.1 per cent respectively.

The percentage of employees in the distributive trades, 20.2 per cent and the absolute number in retail distribution, 3,910, are the highest of the towns being studied. These figures reflect Ayr's excellent shopping services, supported by a similar high level of miscellaneous services. The town performs the function of a service centre for the dairy farming region of South Ayrshire and for many of the county's mining communities.

The burgh's manufacturing industry, while commanding a modest 26 per cent of the labour force, adds consider-

ably to its economic stability, offsetting, to some extent, the seasonal unemployment associated with tourism. Ayr had until recently, made little effort to attract industry, concentrating on its major functions as a tourist, distribution and administrative centre. The industries which have developed are mainly old established local firms which have progressed with the times and expanded. A wide range of specialised industries, many producing for overseas markets, have taken advantage of the town's transport facilities by road, rail, sea and air. Electrical equipment, agricultural machinery, fertilisers, furniture, carpets, textiles and leather products are amongst Ayr's main manufactures.

With the steady growth of Ayr's economic base, the town's population has risen from 20,987 in 1891 to 32,986 in 1911, 36,783 in 1931 and 46,475 in 1966 and throughout the period was in the middle of the range of the towns being studied.

Table 2.2 shows that Ayr has a widely based economy, but the predominant features of its character relates to its function as a regional centre and holiday resort.

LOCATION OF THE CENTRAL AREA (Map 2.17)

The old town of Ayr is situated close to the mouth of the River Ayr at the lowest crossing point of the river and it is in the heart of the old town, the focus of the regional road network, that the central area has developed. The High Street, the main route south from the Auld Brig, was the focus of retailing activity prior to the construction of the New Bridge and has retained this position despite the appreciable development in New Bridge Street and Sandgate.

The central area became established centrally within the built-up area and in general it has retained this location, although the presence of the sea on the western fringe of the central area has effectively stopped urban expansion in that direction.

PHYSICAL GROWTH OF THE CENTRAL AREA (2.18)

At the time of the first survey of the central area in 1882, central area land uses were present on all roads leading from the ends of the two bridges and the central area had a form which can best be described as stellar. The north end of the High Street was the main focus of the region but there were substantial developments in New Bridge Street and Sandgate, on the south of the river, and lesser developments in Main Street and George Street on the North Bank.

1882-1912 was a period of substantial expansion in the central area with major extensions of central area land use to the south in Alloway Street and Burns Statue Square and to the north in Main Street and other important areas of growth in Sandgate and Wallace Street. These developments accentuated the earlier stellar form of the central area.

Further substantial expansion took place in the following period to 1938 when on this occasion expansion was heavily concentrated south of the river in three areas;

1. around Wellington Square to the south west of Sandgate,
2. in Burns Statue Square and Killoch Place in the south and
3. in the land between Sandgate and the High Street.

Once again in the final period of study almost all of

the growth of the central area was concentrated south of the river and in similar locations to those identified in the previous period. At the same time, central area land uses extended into the remainder of a number of plots which had only been partially included in the central area prior to 1938.

CENTRAL AREA GROWTH AND URBAN GROWTH (Map 2.18 2.19)

In looking at the physical growth of Ayr in relation to the growth of its central area, it is necessary to consider the continuous built up area covering Ayr and Prestwick as the population of the whole of this area looks to Ayr for most of its central area level services.

In 1882 the built up area was very strongly concentrated around the mouth of the river with substantial population both on the north and south banks. In addition, a more or less continuous line of development was present between Ayr and Prestwick. Central area land uses were present on all the main roads leading to the core of the central area both north and south of the river. The dominant position of the High Street as the main shopping street cannot be readily explained in terms of population distribution and is more likely to be due to the earlier development of settlement to the south of the river.

1882-1912 was not a period of rapid urban growth but there were appreciable developments immediately to the south-east of the central area and in the north in Newton upon Ayr and Prestwick. The two major extensions of the central area in this period were in a similar direction. While the growth to the south-east and north of the central area was probably associated with urban growth in these directions, there is no such ready explanation for the expansion of the central area into

Sandgate, an area of lesser but still important central area assimilation to the west.

1912-1938 saw a substantial urban growth to the east, north and south of the town centre. Despite the appreciable growth of population to the north and west, there was no expansion in the central area in these directions, indeed the main area of central area growth was to the west of the High Street, the only direction in which there was no urban growth.

The major new housing districts built since 1938 have been to the south and west of the central area, in districts which naturally drain into the south of the central area. At the same time there was some further growth to the north of the central area. Once again the population growth in the north did not lead to any expansion of the central area in that direction, indeed there are two small areas of discard to the north, but there was some expansion to the south, the direction in which the greatest volume of additional population enter the town centre. Once again however the greatest extent of central area expansion was to the west, the direction in which there was no urban growth.

PHYSICAL AND SOCIAL CONSTRAINTS TO GROWTH (Map 2.20)

There are no relief constraints to the expansion of Ayr's central area but the river has had a significant influence on its growth, particularly in the way in which the street pattern has evolved with no major roads leading towards the river other than those leading to the two bridges, and in the way it has attracted industry to its banks. The influence of the proximity of the central area to the sea has been much more indirectly connected with the physical growth of the town and the attraction

of housing types suitable for conversion to offices.

The two most significant social constraints to the growth of the central area have been the railway land which bounds the central area to the north-west and south-east and the industrial land to the east. The combined effect of the river, industry and railway land to the east of the central area, south of the river, has probably been of significance in restricting expansion in that direction.

FACTORS FAVOURABLE TO GROWTH (Map 2.21)

The railway station is located on the south-eastern fringe of the central area and in the direction of most active central area expansion. As this is also one of the directions of major urban growth it is difficult to assess the influence of the station on this growth but the location of newsagents and confectioners, cafes and hotels close to the station suggests that it has played some part in attracting the central area towards the south.

Ayr's main bus station is located in Sandgate, close to the core of the central area, and again it is difficult to fully assess its influence on growth. It has certainly played a role in the westward expansion of the central area particularly in the ground between High Street and Sandgate, the direct pedestrian route from the bus station to the main shopping area, but it is difficult to assess how great its influence has been as it seems likely that there would have been development between these two shopping streets in any case.

The major areas of housing suitable for office conversion are to the west and south-west of the central area and these have played a major role in the expansion of

the central area and this is described in detail below.

GROWTH OF THE CENTRAL AREA IN RELATION TO CHANGES IN CENTRAL AREA LAND USE

As has been noted in the previous town centres, retailing was by far the primary land use in Ayr's central area but in this case however there was an exceptionally large number of inns, taverns and public houses within the central area, probably a reflection of the town's role as a holiday resort and market centre. In 1882 there were a large number of offices in Ayr, relative to most of the other towns, and of these a large proportion were concentrated around the point of maximum accessibility in the north of High Street, in West Bridge Street, in New Market Street and in Sandgate.

The major expansion of the central area to the south between 1882 and 1912 was very largely for additional retailing space although a number of other land uses were present including public houses, hotels and cafes. Extension of the central area to the north was similarly dependent on the demand for additional retailing frontage, but here, an even higher proportion of the floor space was devoted to shops. The third extension, to the south-west in Sandgate and Fort Street, was the result of the development of a much wider range of land uses including shops, offices, a bus station, a club and a public house. In this period there was a substantial growth in offices both within the existing central area and significantly in the extension of the central area in Fort Street.

The growth of the central area in the following period was caused by the expansion of a variety of central area land uses, of which shops were important but not

dominant. The three different areas of assimilation show different characteristics. In the modest southern extension, there was a cinema, garages and a car showroom, offices and shops, while in Wellington Square the extension was very largely for additional office space. The final area, between High Street and Sandgate, was an area of mixed land use most of which was of the type which sought cheaper sites, e.g. a cinema, garages, halls and a bus station. There was a substantial growth of offices during this period, particularly in Wellington Square, but this was not at the expense of other existing office areas, some of which received a modest increase.

The major change since 1938 has been the growth of the office district in and close to Wellington Square, and in this period there was an accompanying modest decline in office uses around the point of maximum accessibility. The other significant extension was to the south and here the development was one of mixed office, retail and service uses. The extension behind the main thoroughfares was once again one of land uses seeking cheaper sites.

Conclusions

The total size of Ayr's central area has expanded continuously throughout the period of study. Prior to 1912, development was on both sides of the river but since then, growth has been concentrated in the south and stagnation and some discard has been noticeable north of the river. Throughout the period, the central area has retained a stellar form with development concentrating on the main routes leading away from the bridgehead. The southern links, however, have become increasingly dominant in the 20th century.

The growth between 1882 and 1912 was very largely a

growth of retailing outlets and these were heavily concentrated in the south and north, the directions of major urban growth. The extension to the south west during this period cannot be explained in terms of population growth within the built up area. In this case the development of Sandgate as part of the regional routeway leading south from New Bridge is part of the explanation as is probably the increase in the population of Ayr's hinterland to the south.

Although there was some modest expansion of retailing to the south between 1912 and 1938, the main growth was of office uses and was concentrated to the west in the area of housing suitable for conversion to offices.

The major growth since 1938 has been in office uses and these have been concentrated to the west of the central area, once again in the area of housing which is eminently suitable for office conversion, and, in a small scale, in the purpose built offices to the south. There were no major areas of assimilation associated with the increase in demand for retail space, the demand being met by greater intensity in the use of land already within the central area, and this is one of the main reasons why the expansion of population in the north was not associated with an expansion of the central area in that direction.

HISTORICAL GROWTH OF STIRLING CENTRAL AREA

Stirling: Situation and Historical Growth (Map 2.1)

The Stirling situation bears many similarities to that of Perth. The town is at the head of navigation and was, in earlier times, at the lowest bridging point of the River Forth. The focus of traffic on the Bridge is encouraged by the channelling of route-ways towards the Stirling Gap in which the town is located. Map 2.1 shows the main routes from Glasgow, the Highlands, Perth, Kinross, Dunfermline and Edinburgh and the way in which they concentrate on the burgh.

Stirling Castle, on the summit of a volcanic plug around the foot of which the Forth meanders, is the focus of the old town. As Stirling grew, buildings spread down the steep slopes of the hill onto the surrounding lower land including the flat plains. With this growth, and the change in transportation media, the focus of the town changed from the castle precincts in the Market Square, to the present shopping area centred on the main road at the foot of the hill.

In 1841, Stirling's function as a route focus had placed it amongst the largest towns in Scotland but its early size, 8,307, did not attract many industries during the Industrial revolution, and this resulted in a slow growth rate with the population rising to 16,000 in 1881, 21,000 in 1911 and 22,500 in 1931 and the smallest present population total of the towns in the study 28,015 in 1966.

The relative unimportance of industry in Stirling's economy and character can be seen in Table 2.2 which shows only 18.4 per cent of the active population being employed in manufacturing, and within this group there

is no single large employer. A number of small light industries are located here of which textile and tobacco manufacturing are the most important.

While Stirling's industry is relatively insignificant, its role as an administrative and commercial centre is much more important than one would expect from its size. Like Perth, it is situated in the north of the central lowlands and provides market facilities for an agricultural hinterland including both highland and lowland farming. As a shopping centre, Stirling caters for a hinterland population of over twice its resident population and provides retail and service facilities comparable with many larger towns. The percentage of the burgh's labour force in distribution and miscellaneous services bears witness to this, see Table 1.1. Being the county town of a compact county, most local government services have been centralised in Stirling and this, together with the presence of the army contingents stationed in the Castle, has given the burgh a high proportion of its employment (16.3%) in this sector. The town has a similar high proportion of its labour force in office services, 15.2%, which is second only to Perth, 16.7%. Stirling's retail and miscellaneous services benefit greatly from the town's role as a tourist centre, with the Castle and the Wallace Monument being the main attractions within the town and the Highlands immediately to the north being an even greater external attraction.

Stirling's character is very much influenced by the fact that over 70% of its economically active population is involved in tertiary activities and this has, in itself, encouraged the town's development as a residential and retiral town. The recent opening and the current expansion of the university will give the town

an even greater share of its employment and income from service activities.

LOCATION OF THE CENTRAL AREA (Map 2.21)

Stirling's central area is located in the fringe of the old town of Stirling at the foot of the Castle Hill on which the town developed and from which it expanded onto the surrounding lower ground. Throughout the period of study the central area has been focussed on the main route around the Castle Hill on the narrow strip of ground above the flood plain and below the sharp slope of the hill. In this location the central area was easily accessible both to those within the core of the old town and to those living in the newer housing developments and the surrounding rural area. As the burgh has expanded, the central area has retained a fairly central location and its position as the most accessible area to the town as a whole.

PHYSICAL GROWTH OF THE CENTRAL AREA (Map 2.23)

Stirling's central area in 1882 had a basic T shape with the main through route of Port Street/Moray Place being the horizontal of the T and King Street/Baker Street being the vertical. The point of maximum accessibility at this time, as in fact it has remained throughout the period of study, was the junction of Port Street, Moray Place and King Street and the T shape of the central area, focussed on this point, reflected the three main pedestrian and vehicular routes into the central area.

Between 1882 and 1912 there was a definite movement in the central area away from the north of Baker Street and a marked area of discard can be seen here. At the same time expansion of the central area was taking place

just south in Upper Craigs and Port Street and also to a lesser extent to the north in Barnton Street. The contraction of the central area in Baker Street and the extension in Upper Craigs gave the central area more of a modified cross shape than the T shape of earlier years.

The period between 1912 and 1938 saw more of a process of consolidation than expansion although some modest expansion to the north in Barnton Street can be identified. By 1938, many blocks previously partially developed by the central area land uses were subject to further development, in many cases the whole of the block now coming within the central area. The modified cross shape noted in the period up to 1912 was not basically altered during the following period.

Between 1938 and 1966 substantial growth in the central area took place with the expansion being very largely concentrated in the south and west. The town centre doubled in area and the growth in physical terms was very much more marked than in either of the two earlier periods. The modified cross shape noted in 1912 and 1938 continues to the present day although as far as retail use is concerned, the Port Street/Moray Place/ Barnton Place axis, the main through route, is by far the most important.

CENTRAL AREA GROWTH AND URBAN GROWTH (Maps 2.23 and 2.24)

Prior to 1882, Stirling's central area had moved from the heart of the old town in Bow Street, Broad Street and Baker Street to its present location. It is probably the tail end of this move which, between 1882 and 1912, resulted in the discard of the area north of Baker Street. While this move did not take place within the period of this study it is worthwhile considering briefly

the changes which were taking place and might have had a bearing on them.

One of the major factors was the expansion onto the lower ground to the south, west and north of Castle Hill and the decreasing proportion of the burgh's population living in the old town. When we consider this together with Stirling's increasing role as a service centre for the rural hinterland, it is clear that the core of the old town was becoming increasingly inaccessible to the majority of the population. Other factors which were at work were probably the lack of space for the expansion of retailing facilities in the old centre, the very steep slope of the Castle Hill and the location of the railway station at the foot of the hill.

Between 1882 and 1912 the main direction of urban growth was to the south and south-west with a smaller area of growth to the east. During the same period the main expansion of the central area was to the south in Upper Craigs but there was also a substantial discard area north of Baker Street. As was noted above this movement out of the old town was related to the area's decreasing accessibility, both in terms of distance and in terms of relief. There is very little growth in population to the north of the town, and this corresponds with the time in which there was little expansion of the central area in that direction.

Between 1912 and 1938 the main direction of urban growth was to the north and it is in this direction that what little expansion there was in the central area was to be found. Lesser developments to the south and west took place at this time, both in terms of urban growth and central area growth.

Between 1938 and 1966 Stirling developed fairly substantial new housing areas to the north, south and east while the major expansions of the central area were to the south and west.

PHYSICAL AND SOCIAL CONSTRAINTS TO GROWTH (Map 2.25)

Physical and social constraints to growth have had a greater influence on the development of Stirling central area than in most of the other towns studied. Relief has played a major role both in the location and orientation of the central area and in the subsequent areas of growth and decline. Steep slopes are to be found around the Castle hill as can be seen in map 2.25. The slope is particularly steep to the north of Dumbarton Road and to the west of Barnton Street but even in the King Street/Baker Street area, in the core of the central area, the slope is marked. The steep slope has been the major influence in restricting the expansion of the central area to the north and was probably part of the reason for the discard of the area north of Baker Street.

The social constraints to growth of industry and railway land, shown in map 2.25, bound the central area to the east and have confined central area expansion in that direction to a narrow strip between the main shopping street and these land uses.

Relief and social constraints have greatly restricted growth of the central area to the north and east, and particularly in recent years have ensured that major central area growth has been mainly to the south and west, as noted above, away from the areas of recent major population growth.

FACTORS FAVOURABLE TO GROWTH (Map 2.26)

Stirling railway station is very close to the central area and it is difficult to demonstrate any clear expansion of the central area in that direction which can be directly related to the presence of the station. It is likely however that the heavy pedestrian flows to and from the station are partly responsible for the unusual location of a Bank in Station Road.

The bus station on Goosecroft Road has had a similar modest effect in drawing the central area towards itself. The development of 2 shops opposite and associated with the bus station and the extension of retailing in Upper Craigs may be part of the results of the location of the bus station.

In Stirling there is a strong association between the availability of housing suitable for office development and the post 1938 expansion of the central area. This expansion, south of Dumbarton Road, is wholly in an area of late 19th and early 20th century housing.

GROWTH OF THE CENTRAL AREA IN RELATION TO CHANGES IN CENTRAL AREA LAND USE.

With 242 shops in 1882 the predominant central area land use was retailing, although other central area land uses such as local authority offices and places of worship, entertainment and refreshment were also represented.

The main extensions of the central area to the south and north between 1882 and 1912 were for additional shopping frontage and to a lesser extent for offices, particularly Government offices, which grew from 50 in 1882 to 85 in 1912.

Between 1912 and 1938, growth in the central area was partly for retailing, the number of shops rising to 334 by 1938, and partly for the development of service activities such as cinemas, billiard rooms, garages, restaurants etc. While additional retailing was concentrated on the main street frontages, these latter activities tended to locate on the fringes of the shopping area, sometimes in side streets and sometimes in the unused land behind the main retail frontages. The number of offices also rose, to 117, with most of the additional offices being located in the south.

Between 1938 and 1966 the main reason for the substantial expansion in the central area was the colonisations south of Dumbarton Road by offices. This growth in offices south and west has been for additional office space and has not been at the expense of office space in the core of the central area. Although there is a reduction in the number of offices in the core of the central area this has been more the result of amalgamation of smaller offices into larger ones than the colonisation of office premises by retailing and other central area land uses. As was noted in the 1912-1938 period there has been an increase in the number of service activities in the central area and once again these have tended to be off the main shopping streets. Although there are no areas of assimilation for retailing during this period the decline in the number of shops was slower than in most other towns while there was an increase in the intensity of use of space already within the central area.

CONCLUSIONS

Stirling central area has grown substantially in the study period with the expansion being particularly marked

to the south with the only area of discard being to the north-west on the Castle Hill.

In 1882 the central area had a T shape with each of the arms of the T being along the main routes into the points of maximum accessibility from the settlements on the Castle Hill, and to the north and south of the hill.

Extension of the central area to the south in Upper Craigs and Port Street in the period from 1882 to 1912 can be related to the main growth of the town being to the south along these 2 routes. The area of discard in Baker Street reflects the movement of the geographical centre of population away from the Castle Hill and also the problems of accessibility created by the steep slope in this area.

1912 to 1938, in general a period of consolidation rather than growth, saw both the main urban growth and the only significant central area expansion of retailing being to the north.

Despite the fact there was a substantial urban growth to the north in the 1938 to 1966 period, almost all of the extensive central area expansion was to the south. A number of factors were at work here among which the more important was firstly the restrictions to growth, both physical and social, to the north of the central area, secondly the fact that the growth was primarily for office development and therefore not strongly tied to the main pedestrian flows and thirdly the availability in the south of housing areas suitable for office colonisation.

The study of the development of Stirling central area is a good example of the inter-action of social and physical

constraints to growth and some of the factors favourable to growth. Physical constraints have affected the development of the central area throughout the period of study. While in the earlier periods the main growth was of retailing space and located in the main directions of urban growth, in the most recent period the growth was primarily for additional office space and was located in the south and west where there was substantial housing suitable for conversion.

HISTORICAL GROWTH OF KILMARNOCK'S CENTRAL AREA

Kilmarnock: Situation and Historical Growth (Map 2.1)
Kilmarnock is located in the east of the Ayrshire basin at the confluence of the River Irvine and the Kilmarnock Water. The valleys of these rivers, together with other natural routeways, focus several major roads on the town, among which the Glasgow-Ayr and Edinburgh-Ayr roads are the most important. One of the main Glasgow-London railway lines passes through Kilmarnock, while ease of access to the Clyde and the Ayrshire coast and the international airport at Prestwick has helped in its industrial development.

Population growth was slow up to the 17th century, when settlement was still limited to a small cluster of houses. As was noted with Hamilton's development, it was the exploitation of the local coalfield which led to rapid expansion but, unlike Hamilton, Kilmarnock became an industrial centre in addition to a mining centre and it is these early manufacturing firms, together with firms established since, which gives the town its present social and economic character.

The Burgh's westerly location and resultant moist climate, the availability of water as a raw material and source of power, and an abundant supply of wool from both lowland and upland sheep, gave rise to the spinning and weaving of wool in the 17th century. With the exploitation of local coal in the 19th century and its application to industry as a means of power, Kilmarnock's already thriving textile industry was greatly expanded, particularly in the field of carpet manufacturing. The latter has continued to grow to the present day when several firms, the largest of which is Blackwood-Morton

Company Limited, employing some 3,000 workers, have built up a world wide reputation in this field. The Burgh, with an 1881 population of 25,844, was second in population only to Perth at the start of the study and steady growth since to 35,747 in 1911, 38,100 in 1931 and 47,509 in 1966 has kept it among the largest of the towns being studied.

Table 2.1 shows that Kilmarnock has a particularly high proportion of its labour force (49 per cent) in a wide range of manufacturing industries among which the largest are Massey Ferguson, Engineering; John Walker, Whisky blending; Saxone, shoe manufacturing and the carpet manufacturers. Despite the large number of workers in industry, the predominant industrial character of the town and the relatively low proportion of the labour force in distribution and services, Kilmarnock is a regional shopping centre of considerable significance. It is located in the highly prosperous Ayrshire dairy farming region and acts as a market and distribution centre for the population of the agricultural and mining communities in its hinterland. While the shopping facilities in Kilmarnock are of a high standard, retailing, office activities and Government services are overshadowed by those in Ayr, the County town. Both the absolute number and the proportion of the labour force in each of these activities is low in relation to that found in the other centres studied.

LOCATION OF THE CENTRAL AREA (Map 2.27)

Kilmarnock's central area, located in the core of the old town, has developed around The Cross, the point at which a number of regional routes converge, and along the line of King Street/Portland Street on the Ayr/Glasgow route. In 1882 the central area was fairly

centrally located within the town which was elongated in a north-south direction in the valley of the Kilmarnock Waters. In the period since 1882 the town has expanded in all directions but has retained the dominant north-south alignments. The central area has remained geographically central within the town throughout the post 1882 period and has maintained its position of premier accessibility to the town as a whole.

PHYSICAL GROWTH OF THE CENTRAL AREA

In 1882, Kilmarnock's central area was strongly focused on The Cross and the major streets leading from The Cross, in particular along the main through route of Portland Street and King Street. The crude star shape of the central area reflected the numerous major routes leading to The Cross, while the longest points were, at the same time, along the major through route and the roads leading to the largest population concentrations.

The development of a second major commercial street along John Finnie Street, to the west of and across the Kilmarnock Water from King Street, was the main feature of the 1882-1912 period. At the same time there was a considerable increase in the intensity of central area land uses between King Street/Portland Street and John Finnie Street, in particular along the line of Bank Street. Although the main central area growth was to the west, there was significant expansion to the north in Portland Street and to the south in Titchfield Road, the southern extension of King Street.

1912-1938 saw very little change in the geographical extent of the central area. The only physical expansion being a modest further extension of central area land uses to the south in Titchfield Street.

The main growth in the central area between 1938 and 1966 was to the west of John Finnie Street in the Grange Street/Portland Road area, while lesser but significant expansion can be identified to the east in Sturrock Street, Clark Street and Clark's Lane, to the south in Tichfield Street and to the north in Back Street and Portland Street. The basic star shape of the 1882 period can still be seen in the shape of the central area of 1966 but the main shopping street, Portland Street/King Street/Titchfield Street, has become increasingly dominant while the second parallel street of John Finnie Street is now an important feature of the central area.

CENTRAL AREA GROWTH & URBAN GROWTH (Maps 2.18 and 2.19)

The north south orientation of Kilmarnock's central area in 1882 reflects the shape of the town at this time as can be seen in maps 2.28 and 2.29. Most of the pedestrian and vehicular movement into the central area was concentrated on the streets leading to The Cross and in particular Portland Street to the north and King Street to the south. The extension of the central area into St. Marnock's Street reflects the substantial population located to the south-west of the central area in the Dundonald Road area, which at this time would have entered the central area by St. Marnock's Street.

Between 1882 and 1912 Kilmarnock's new housing areas were built very largely to the west of the town in the Bonnyton area, towards Longpark and especially in the south-west to the west of the Kilmarnock Water. The majority of the additional population dependent on the central area for services were thus entering the central area from the west along Mill Street, Langlands Brae, Portland Road and Dundonald Road and it was in this direction that

the major area of expansion was to be found.

1912 to 1938 saw substantial urban growth in all directions but very little growth in the central area. The modest urban extension to the south cannot be related to any dominant expansion in the central area in that direction during this period.

Since 1938 the Burgh's housing development has been mainly to the north in the Attonhill district and to the south in Shortlees. The major extensions to the central area on the other hand have been to the east and west, although modest expansion to the north and south have been noted above.

PHYSICAL AND SOCIAL CONSTRAINTS TO GROWTH (Map 2.30)

Map 2.30 shows that Kilmarnock's central area is located between steep river terrace slopes. To the east, the steep slope is only a constraint in the Sturrock Street/ Clark Street area where the slope itself and its affect on street patterns has had an influence in restricting expansion of the central area, possibly throughout the period of study, and definitely in the more recent period. On the west of the central area the river terrace is much more extensive, extending from the north of Portland Street, where it is particularly steep, almost to Portland Road. The relief constraint has been particularly marked in the north-west where the slope is steepest and where it comes close to the main shopping street. There is a strong relationship between the line of the steep slope and the boundary of the central area to the west. The Kilmarnock Water has also been a constraint to central area expansion, particularly in the earlier years where it bounded the central area to the west. Central area land uses extended westwards

however by moving around the barrier to the north and south and today the river is no longer a significant feature to the west of the central area. To the east however, the river and associated industries have been a constraint throughout the period since 1882, although the carpet factory which was closest to the central area in Clark Street has moved out in recent years and central area land uses have moved onto the site.

Social factors have not been of major significance in constraining Kilmarnock central area expansion although the presence of industry to the north-east of The Cross has had some influence in restricting growth in that direction. The influence of the railway, to the north of the central area, has been reduced by the fact that it crosses the central area on a viaduct which has provided numerous bridges through which roads can pass and therefore allows relatively free movement under the railway. This area however provides an unattractive environment which has probably discouraged development.

FACTORS FAVOURABLE TO GROWTH (Map 2.31)

The railway station is located on the fringe of the central area close to the main shopping thoroughfare. There has therefore been little opportunity for the central area to expand in that direction. The bus stations in Kilmarnock are similarly located close to the main shopping street and have not had a major influence in the physical expansion in the central area.

Areas of housing suitable for development of offices are present to the west of the central area and to a much lesser extent to the east. Both these areas, and in particular the area to the west of the central area, have attracted office development in the post 1938 period.

GROWTH OF THE CENTRAL AREA IN RELATION TO CHANGES IN CENTRAL AREA LAND USE

In 1882, by far the most dominant land use in the central area was retailing. While the principal shopping streets were King Street and Portland Road, appreciable numbers of retail outlets were to be found in the other streets leading from The Cross and also in West George Street and John Finnie Street to the north and St. Marnock's Street to the south. Kilmarnock also had a substantial number of offices which, while being present in many of the streets within the central area, tended to be concentrated in the area around The Cross. A wide variety of land uses were represented in the central area, including an appreciable number of public houses.

The major extension of the central area to the west in the period from 1882 to 1912 was largely the result of a marked increase in both retailing, from 341 to 434, and offices, from 59 to 108, with most of the new offices and much of the additional retailing being in this area. The remaining new offices were concentrated near The Cross while the extension of the central area to the south in Titchfield Street and to the north in Portland Street were almost wholly for retailing. In this period the range of other central area land uses was expanded with billiard saloons, dentist surgeries, studios and salerooms becoming more frequent. In general, these central area land uses were located in fringe locations, either vertically or horizontally.

1912 to 1938 saw a further sharp increase in the number of offices, to 148, with the new offices being located both in the streets leading from The Cross and in John

Finnie Street and the streets leading to it. This increase in offices was within the existing central area and did not lead to any central area growth. The modest expansion of the central area to the south at this period was mainly for retailing which declined in number of outlets to 378. As in the earlier period, there was an increase in the proportion of non-retailing activities with garages and car showrooms becoming increasingly more frequent and new activities such as the child welfare centre and a dance studio being introduced into the central area.

The substantial growth of the central area to the west in the post 1938 period was very largely the result of the extension of office uses, including a number of doctors surgeries. The increase in intensity of central area land uses in this area brought a number of peripheral service activities, including garages, previously located outwith the central area boundary, into the central area. Those to the east in King Street involved a wide range of activities including a few shops, a salvation army hall, a club, garages and car showrooms, warehousing, storage for retailing and car parking. Much of this area consists of buildings in poor condition and the activities which are located here are the type which cannot afford a good site within the core of the central area. The small extensions to the main retail frontages in Titchfield Street and Portland Street were mainly for further retailing outlets while large garage and car parking facilities took over the mill premises in Clark Lane. Both office development and service activities played an important role in extending the central area at this period although the number of offices increased only slightly while there was a further reduction in the number of shops.

CONCLUSIONS

The marked westward expansion of Kilmarnock's central area is the major feature of physical growth since 1882 while the extensions of the main shopping streets throughout the study period are also worthy of note. The westward expansion of the central area was a result of two distinct periods of growth and two distinct factors influencing growth. The first extension of the central area to the west was between 1882 and 1912 when shops and offices moved into John Finnie Street in considerable numbers and this coincided with the concentration of population growth in that direction. The second expansion towards the west was in the post-1938 period when the increasing demand for office space and the availability of housing suitable for conversion to offices in this area resulted in the extension of the central area.

Despite considerable growth of population to the north, growth of the central area in this direction has been small due to a combination of factors, the most important of which are (a) the extremely steep slope to the north-west of the central area, the direction from which most of the population enter the central area; (b) the presence of the railway line and viaduct which were probably both a social and a physical barrier to growth; and (c) the presence of industry to the north-east.

Physical and social constraints have both been important influences on the evolution of Kilmarnock central area, while direction of population growth and housing suitable for office conversion have been the major attraction to growth. Additional retailing space was the primary

reason for pre-1912 expansion while office uses gave rise to much of the post-1938 growth. The assimilation of land into the central area between 1912 and 1938 was due to the increase in the wide range of uses other than offices and retailing, a feature which could also be seen in the areas assimilated between 1938 and 1966.

HISTORICAL GROWTH OF KIRKCALDY'S CENTRAL AREA

Kirkcaldy: Situation and Historical Growth (Map 2.1)
Kirkcaldy is situated on the south Fife coast, 45 minutes journey by road or rail from Edinburgh and 30 minutes from Dunfermline. The coastal site was originally developed by a number of small fishing communities which coalesced to form the present burgh.

Being neither an administrative nor a religious centre, the town's early growth was slow, but, with the advent of the Industrial Revolution the rate of expansion was increased to such an extent that from being, in 1841, the smallest of the 8 towns (4,785), Kirkcaldy had risen to 23,315 by 1881 and in 1966 was the largest (51,935) of the towns being considered.

The 18th and early 19th century expansion was related to development of flax spinning and linen weaving. The fast growth during the 19th century was closely related to the expansion of linen and the introduction of linoleum manufacture, for which such firms as Michael Bairn and Company and Barrie, Ostlere and Shepherd have made the town world famous.

By the time mining was introduced on a large scale in Fife, Kirkcaldy was already the most important town in the region and, as its hinterland became more populous, and employment opportunities expanded, the town's service facilities improved and its population increased. Between 1881 and 1911 the population of the Burgh rose from 23,315 to 39,601 and by 1938 it had risen further to 43,874.

In recent years, mining, linen and linoleum have all declined in both production and importance to the town's

economy. New industries have however been introduced to make up for the loss of jobs in these older sectors and a highly active Town Council has enticed several large growth industries such as Rank Taylor Hobson (Electrical Goods) to locate in the town. The successful development of industry at nearby Glenrothes new town has added to the employment opportunities of the population in the Burgh and its hinterland.

While industry is undoubtedly important in the town's economy, the Burgh's role as a market, distribution and, more recently, administrative centre is of considerable importance, particularly to the agricultural, industrial and mining region of south and central Fife. Table 2.2 shows that a very high proportion of the population are employed in service activities and, as will be seen in Section 3, the shopping facilities are of very high order. Kirkcaldy is primarily an industrial centre but a balanced employment structure has been retained with all service activities being fairly well represented.

LOCATION OF THE CENTRAL AREA (Map 2.32)

Kirkcaldy's central area has developed in the coastal fishing village of Kirkcaldy and is centred on the coast road linking the village with neighbouring settlements. With the sea to the east and land physically difficult for development to the south, the Burgh's growth has been mainly to the north and west. Although urban growth has left the central area increasingly in a less central location, it has retained its position as the most accessible area for the whole town and has maintained its role as the focus of the town's social and commercial activities. The High Street, the principal shopping street, follows the line of the old coast road some 20-30 feet above sea level at the foot of the slope

separating the lowest beach from those higher up. Above and below this slope the ground in and around the central area slopes gently towards the sea.

PHYSICAL GROWTH OF THE CENTRAL AREA (Map 2.33)

In 1882, Kirkcaldy's central area was linear in form with central area land uses being wholly concentrated along the High Street which runs in a north-south direction.

Between 1882 and 1912 the main growth in the central area was to the south with the extension of central area land uses along the High Street. During this period the linear form of the central area was retained and if anything accentuated.

The period from 1912 to 1938 saw a marked expansion of the central area to the west of the High Street, primarily along the frontage of the streets leading to the core of the High Street, White's Causeway, Hunter's Street/Balfour Place and Kirk Wynd. At the same time, in the south of the High Street, there was an appreciable extension by the assimilation of the remainder of blocks, the frontage of which were already included in the central area. The linear form was retained during this period but by 1938 there was a noticeable westward bulge towards the middle of the High Street.

Between 1938 and 1966 the growth of the central area was again most marked to the west of the High Street with growth along both sides of East Fergus Place and Wemyssfield. During the same period a substantial area of land between the High Street and the esplanade to the east had also been assimulated into the central area.

CENTRAL AREA GROWTH & URBAN GROWTH (Maps 2.33 and 2.34)

In 1882 Kirkcaldy was very much a linear settlement with the built up area being confined to a fairly narrow strip on either side of the High Street and its extensions to the north and south. Except in the north, where the strip of settlement moved inland along the line of the Cupar Road, the settlement ran parallel with the coast. The central area at this time had a similar linear form on the same axis.

Between 1882 and 1911 there were substantial areas of urban growth in Linktown, to the south of the central area, towards Hayfield in the west and in Sinclairtown to the north. During this period the growth of the central area was largely to the south, one of the directions of major urban growth.

1911 to 1938 saw considerable expansion of the urban area in the Hayfield district to the west and some further growth to the north in Sinclairtown. During this time there was a marked expansion in the central area along the roads leading to the central area from the west, the direction in which the greatest additional pedestrian flows were to be found.

Rapid urban growth in the Smeaton and Templehall areas to the west has marked Kirkcaldy's growth since the war. There has also been some further growth to the north of the town and continuous settlement now extends from the central area to the previously separate settlement of Dysart. During this period the central area growth has been most marked to the west with the extension of central area land uses towards Bennochy Bridge. In addition the central area has extended back from the High Street to assimilate the land lying between the High Street and the esplanade.

PHYSICAL & SOCIAL CONSTRAINTS TO GROWTH (Map 2.35)

While the raised beach cliff behind the High Street is present throughout the length of the central area, it is only to the north in the area shown on map 2.35 that it offers a major barrier to easy movement of pedestrians and vehicles. In this part of the central area relief has been a major constraint to central area growth and there have been no extensions of central area land uses across this slope despite the likely pressure created by additional population living in that direction.

The natural barrier of the sea has, for a long time, discouraged expansion of the central area to the east as it has effectively stopped all house building in that direction. In the north, the sea, the docks and industry, combined with the relief constraints to the north-west, have discouraged any expansion and the central area boundary in this direction has remained constant throughout the period of study.

To the west, central area growth is constrained by industry and by railway land and these constraints have become of increasing importance in recent years.

FACTORS FAVOURABLE TO GROWTH (Map 2.36)

Kirkcaldy's railway station is located on the western fringe of the central area in the direction of most active expansion in recent years. It is difficult to assess the effect the railway has had in pulling the central area towards the west as many other factors have been at work but other than the attraction of two convenience shops partly serving rail passengers the effect appears to have been slight.

The main rural bus station is to the east of the High

Street, see map 2.36. A number of central area land uses have located opposite the bus station but once again the extension of the central area towards the public transport terminus is not the primary reason for the extension of the central area in that direction in recent years. Since the war, the Kirkcaldy town bus service has operated from the new bus station in Wemyss-field to the north and in close proximity to the High Street and while this has not affected any area of assimilation or discard it could well be influencing the internal structure of the central area.

Areas of housing suitable for office development lie to the west of the High Street, see map 2.36. While central area land uses, and particularly office uses, extended into this area between 1912 and 1938, the main development of this area has been in the most recent period up to 1966. The major extension of Kirkcaldy's central area in this century has been into this area and most of this expansion has been for additional office space.

GROWTH OF THE CENTRAL AREA IN RELATION TO CHANGES IN CENTRAL AREA LAND USE.

In 1882, Kirkcaldy High Street, in effect the central area, was primarily a shopping street although a wide range of other land uses were represented. Despite being one of the largest settlements at this time, Kirkcaldy had the fewest central area shops, 225, and only a modest number of offices, 36. One notable feature at this date and in fact to the present day was the concentration of public houses in the north of the central area. While these public houses were partly serving the central area, they mainly concentrated in this area due to the presence of the docks.

Although there was appreciable population growth in the period to 1912, the number of shops, 304 and offices 84, while appreciably higher remained low in relation to the other towns. The expansion of the central area to the south in this period was almost entirely an extension for retailing, while the modest extension in Kirk Wynd was both for shops and offices. The additional offices were mainly located centrally in the High Street in the district between Rose Street and Roseburn Wynd.

The growth in the number of shops was higher in Kirkcaldy between 1912 and 1938 than in any of the other towns being studied although the number of offices rose only slightly. There were 4 distinct areas of assimilation in the period up to 1938. In the south, the opening of the Olympia Arcade with some 17 shop units extended the central area into Milton Road at the south end of the High Street. This extension was primarily for retailing as was the most significant extension, that in White's Causeway which saw the development of the only important shopping frontage other than the High Street. The extension to the west in Balfour Street and Hunter Street was a mixed development of shops, offices and other central area land uses, taking in the post office which was already established in the area prior to 1912, while the extension in Kirk Wynd and into St Brycedale Avenue was similarly for mixed central area land use. An important feature of the westward extension of the central area was the location of the Burgh and County Offices which, together with retailing, were the main reasons for the expansion in this period.

1938-1966 saw a marked decline in the number of shops and an increase in the number of offices. There was a further extension of the central area to the west and once again offices were important in the expansion

although in this period the growth was of both Government and private offices. This extension was mainly into an area of large houses situated in their own private gardens.

While offices were extending to the west, the number of offices in the central High Street declined sharply and although some of the reduction was caused by the amalgamation of small offices to form larger ones, the valuation roll evidence clearly shows that some of the office space was taken over for other uses, primarily retailing. Between 1912 and 1938 and particularly since 1938, there had been a sharp increase in the number of service activities within the central area. Among the most important of these, particularly in terms of land use, are garages, places of entertainment and such Local Government services as clinics and a library.

To the east of the High Street the remaining land between the main shopping frontage and the esplanade was taken over by central area land uses by 1966. Much of this area has been developed by the larger shops extending their premises to the rear, while rear access and private parking were also major land users. The Market Street, Thistle Street and Cowan Street area, formally an area of poor quality housing, has been designated for comprehensive redevelopment and much of the land was cleared and was either being redeveloped or was temporary car parking at the time of the survey.

CONCLUSIONS

Kirkcaldy's central area has been subjected to continuous growth throughout the period of study and there is no evidence of any areas of discard. The linear form of the central area up to 1912 very greatly reflected the linear form of the town. No important streets led into

the High Street and there was no attractive alternative frontage along which retailing could develop. The extension of the central area to the south between 1882 and 1912 was not related to any dominant growth of the town in that direction but more to the need to extend retailing frontage, the lack of any alternative street frontages and the physical constraints to expansion to the north.

The extension of the central area to the west between 1912 and 1938, particularly the extension of retailing along White's Causeway, can be related to the growth in population to the west of the central area and the increasing number of people entering the central area from the direction of Bennochy Bridge. There was no one main street leading to the central area from the west and this gave rise to the extension of central area land uses along the 3 alternative routes.

The availability of housing suitable for office development, the marked western growth of the town and the constraints to northward expansion of the central area can be seen to be the main reasons for the extension of the central area to the west in the period up to 1966.

Relief constraints to the north and north-west have influenced the growth of the central area throughout the study period but otherwise the central area has not been greatly influenced by constraints, either physical or social. The dominant factors which have attracted growth in their direction have been population growth and housing suitable for conversion to offices. Additional retailing space was the primary reason for expansion in the central area between 1882 and 1912 while a wide range of uses required additional space between 1912

and 1938 and office uses dominated the growth in the post 1938 period.

HISTORICAL GROWTH OF PERTH CENTRAL AREA (Map 2.1)

Perth: Situation and Historical Growth.

Perth's character owes much to its nodal situation at the lowest bridging point and head of navigation of the River Tay. Map 2.1 shows several major routeways converging on the town. The main routes from Edinburgh, Glasgow, Stirling, Crieff, Inverness, Aberdeen and Dundee are channelled through gaps in the uplands of the Central Valleys and the Highlands. This situation, together with the town's former status as the Scottish capital, led to its development as one of the more important and larger urban communities in Scotland before the industrial revolution. Its location in the extremely fertile region of Strathmore, within 15 miles of the Highlands, has given it a highly prosperous agricultural hinterland. This has allowed and encouraged the town's growth as a market and distribution centre for a large area of Perthshire and parts of Angus, Fife and Kinross. The considerable distance between Perth and other centres of equal or higher rank has also fostered this development.

Despite Perth's early size and wealth, it was not greatly affected by the industrial revolution. Its position to the north of the industrial belt, well away from the coalfields, has discouraged most industrial developments with the result that Table 2.2 shows only 15 per cent of Perth's economically active population being engaged in industry. It is pertinent to note that over half of these industrial workers are employed in the manufacture of food and drinks, particularly the blending of whisky, and in printing and publishing. The remaining industrial workers are employed in a wide range of small light industries.

In contrast to the very low percentage of the town's labour force in manufacturing industry, its role as a distribution

and market centre is particularly noticeable in the extremely high proportions of workers in communications, distribution, financial and professional services, miscellaneous services and to a lesser extent National and Local Government. The high figures shown for financial office workers is largely due to the foundation and expansion in the Burgh of the nationally important General, Accident, Fire and Life Insurance Company. The figure for the miscellaneous services is similarly raised by Pullars of Perth, the Dry Cleaners, another local firm operating on a national level. Also included in this group is the large number of workers involved in the tourist industry: the town's function as a tourist centre and "gateway to the Highlands" has become of increasing importance in recent years. Perth's importance as an administrative centre is largely dependant on its status as the county town. Although large in area, the county's population is only 126,230 and this has to some extent restricted the town's potential growth in administrative services.

Perth has developed slowly, but steadily, as a commercial and administrative centre for an agriculturally rich hinterland, and also in recent years as a tourist centre. Its population rose from 26,982 in 1881 to 35,854 in 1911, fell slightly to 34,807 in 1931 and rose again to 41,296 in 1966.

LOCATION OF THE CENTRAL AREA

Perth's central area is located on the west bank of the River Tay and is focussed on the two major roads leading away from the old bridgehead, High Street and South Street. The River Tay and the presence of land topographically unsuitable for major housing development on the east bank have together concentrated urban growth

to the west of the river.

Throughout the study period the central area has remained physically central within the town although the restricted development to the east of the central area has meant that outlying housing developments are at a greater distance to the central area than is the case in some other centres where development has been equal in all directions from the central area. Other than the presence of the River Tay, there are no physical constraints to central area growth, the site of the central area and the land immediately around it being fairly level.

PHYSICAL GROWTH OF THE CENTRAL AREA (Map 2.38)

The early importance of Perth as an administrative and commercial centre is described above and this is particularly relevant in this section as it gave Perth by far the largest central area of the towns investigated at the start of the study period. In 1882 Perth had almost twice as many central area shops as any of the other seven towns and three times as many as some of them. This large number of shops is reflected in the absolute area covered by the central area. The existence of two main shopping streets is both a reflection of the absolute demand for shop frontage and the historical growth of the town. Initially the east-west route was down the High Street and across the Old Bridge. Well before 1882 the Old Bridge was replaced by Victoria Bridge and South Street became the line of the through route from the south and west to the east. In 1882 the principal retail outlets were in High Street and South Street contained the smaller and less important shops, a situation which has continued up to the present day. The central area's shape in 1882 was

rectangular with Tay Street along the river front, High Street and South Street being the major axis of the central area with lesser developments along some of the side streets leading to the central area, in particular North Methven Street and Leonard Street. This compact rectangular shape has been maintained throughout the period of study.

The period between 1882 and 1912 saw only one area of substantial growth, that being the major extension in County Place and York Place, the westward continuation of South Street. Two lesser extensions can be seen in Princes Street to the south and Charlotte Street to the north of the central area.

Although there were a few small extensions to the central area between 1912 and 1938, these were insignificant and were not concentrated in any particular area of the town.

By 1966 the central area had expanded both modestly to the west and rather more significantly to the north between Kinoull Street and Charlotte Street while a small area of discard can be identified in Leonard Street.

CENTRAL AREA GROWTH AND URBAN GROWTH (Maps 2.38 and 2.39)

In 1882 Perth was a fairly compact City with the bulk of the population living to the west of the river but with some significant development also on the east bank. Between 1882 and 1912 the main direction of urban development was to the west, especially along the Glasgow Road, a completely new axis of urban development. Other significant growth was to be found to the east of the river in Bridgend, to the north of the central area towards Muirton and to the south of the central area in the Craigie district. The most significant

feature during this period was the fact that there was very little expansion of the central area in a period where the town showed substantial population growth.

1912 to 1938 saw further urban growth, particularly to the north at Muirton, but once again there was virtually no growth in the central area.

During the 1938 to 1966 period there was further major urban growth, particularly to the west of the town in the Letham district and also to the north and south, at Muirton and Moncrieff. During this period the major central area expansion was to the north, the direction in which there was least growth of population.

PHYSICAL AND SOCIAL CONSTRAINTS TO GROWTH (Map 2.40)

As mentioned above, the River Tay is the only physical constraint to the expansion of the central area. While the river has physically precluded any eastward expansion, it provides a pleasant environment which has resulted in Tay Street being a much more attractive location than its peripheral situation would indicate, the river in this case being as much an attraction to development as a constraint.

Social constraints to central area growth have played an important role in its expansion throughout the period since 1882, for example in the North where industry and the railway have discouraged growth in that direction. The North Inch, like the River Tay, has both been a barrier to the expansion of the central area, and an attraction to the development of central area land uses on its margins. By the restricting development on the North Inch, the possibility of expanding the central

area to the north has been limited but on the other hand the quality of the environment resulting from the presence of this open space has played a significant role in the type of housing which has developed in Atholl Place and Atholl Crescent and this has in turn attracted significant office development.

Pullars of Perth Factory, now completely within the central area, is an interesting example of the constraining effect of industry on the expansion of the central area. Until 1938 the factory marked the northern boundary of the central area and on the east, north and south sides of the factory non-central area land uses and central area uses which could only survive on the least expensive sites were to be found. Even now when the factory has been completely encircled by central area land use, the land close to the factory is still only utilised by the weakest central area uses and non-central area land uses.

FACTORS FAVOURABLE TO GROWTH (Map 2.41)

Perth has three bus termini as shown on map 2.41, the main rural bus services operating from Tay Street. The bus stations are sited within or close to the central area as it existed in 1882 and there has been no expansion in the central area towards them. The railway station is located to the south of Leonard Street and while the central area extends towards the station, its presence has not given rise to any expansion and indeed this is the direction in which the only area of discard within the town is to be found.

Housing suitable for office use is to be found in Atholl Place and Atholl Crescent to the north of the central area, in York Place in the west and in King Street to the

south-west. The first two of these areas have given rise to the only areas of substantial central area growth in the whole period since 1882.

GROWTH OF THE CENTRAL AREA IN RELATION TO CHANGES IN THE CENTRAL AREA LAND USE

Although Perth was predominantly a shopping centre in 1882 it had a very large number of offices and these showed a marked concentration in Tay Street, the east end of High Street, St John Street and Kirkgate. Both the number of shops, 695 and the number of offices, 72, were well above any of the other towns at that date.

1882 to 1912 saw only a very modest growth in the number of shops, to 712, but more substantial growth in offices to 159. The main area of expansion in this period was in York Place and County Place where the growth was for retailing on the edge of the existing retailing area and offices and hotel uses further west. The lesser expansion in Princes Street was for a very modest extension of retailing. The marked rise in the number of offices was contained within the existing concentration of offices in the lower High Street/Tay Street area.

The number of shops fell from 712 to 657 between 1912 and 1938 while offices rose from 159 to 192. There was no significant expansion of the central area during this period but within the region the further growth in the number of offices saw a wider spread of this type of land use with substantial expansion into County Place and York Place and in the region of St.Paul's Square.

The northward expansion between 1938 and 1966 was almost wholly the result of office uses moving into the environmentally attractive and physically suitable properties in Atholl Place and Atholl Street, which

together with the office use in Charlotte Square gave a logical extension of the office district. The lesser extension to the north was also the result of offices moving into housing suitable for such development and was again an extension of an existing office district. While the number of offices rose appreciably to 226 the number of shops was markedly reduced to 486.

CONCLUSIONS

Perth's central area is unique among those covered in this study in that there has been only modest expansion in the central area since 1882 and much of this was for office uses in the last 30 years. The City's regional significance before and during the 19th century gave the town an extremely large central area at the start of the study period. Perth did not "benefit" from growth in its hinterland during the industrial revolution and while the demand for central facilities has increased sharply in other centres, the proportionate growth in Perth has been much less and has not led to any substantial central area expansion, the areas of assimilation during the last 30 years being concentrated in those areas in which there was housing suitable for conversion to office use.

Due partly to the absolute demand for central area sites, physical constraints and historical development, the central area had a rectangular shape in 1882 and focussed on High Street, Tay Street and South Street, all major through routes. This complex shape has continued throughout the study period and has only been slightly altered in recent years. There has been no dominant direction of growth with all round expansion of the town encouraging the continuation of a compact shape. The

lack of growth rather than the direction or type of growth has been the most striking feature of the historical development of Perth's central area.

CONCLUSIONS

HISTORICAL DEVELOPMENT OF THE CENTRAL AREA

The investigation of the historical development of the central area demonstrates that its nature and form is the result of a complex interaction of a wide range of factors, many of which are of a local nature. It is possible, however, to identify common features which aid the understanding of the present character of the central areas of Scotland's medium sized towns.

LOCATION OF THE CENTRAL AREA

In all the towns studied the central area is located in or close to the historical core of the settlement and, despite being in an increasingly off centre location in some cases, there has been no movement of the central area away from this core during the study period. It should be noted, however, that there is evidence of an earlier movement from the historical core of Stirling, but even in this case the distance involved was not great.

The reasons for such a location are clearly related to accessibility, initially primarily in terms of pedestrian movements but latterly also in terms of public and private transport. Evidence of the importance of accessibility in the location of the central area can be seen from a number of indicators including;

(a) the movement of Stirling's central area from the Castle Hill to its present location. This move was very largely the result of the expansion of the town away from the Castle Hill and the greater attractiveness of the present site in terms of accessibility to the population of the town and its hinterland.

(b) the central area in all cases is located at the focus of the regional and local road network and within the central area the keenest competition is for sites as close as possible to the Peak Land Value Intersection.

CHANGING FUNCTION OF THE CENTRAL AREA

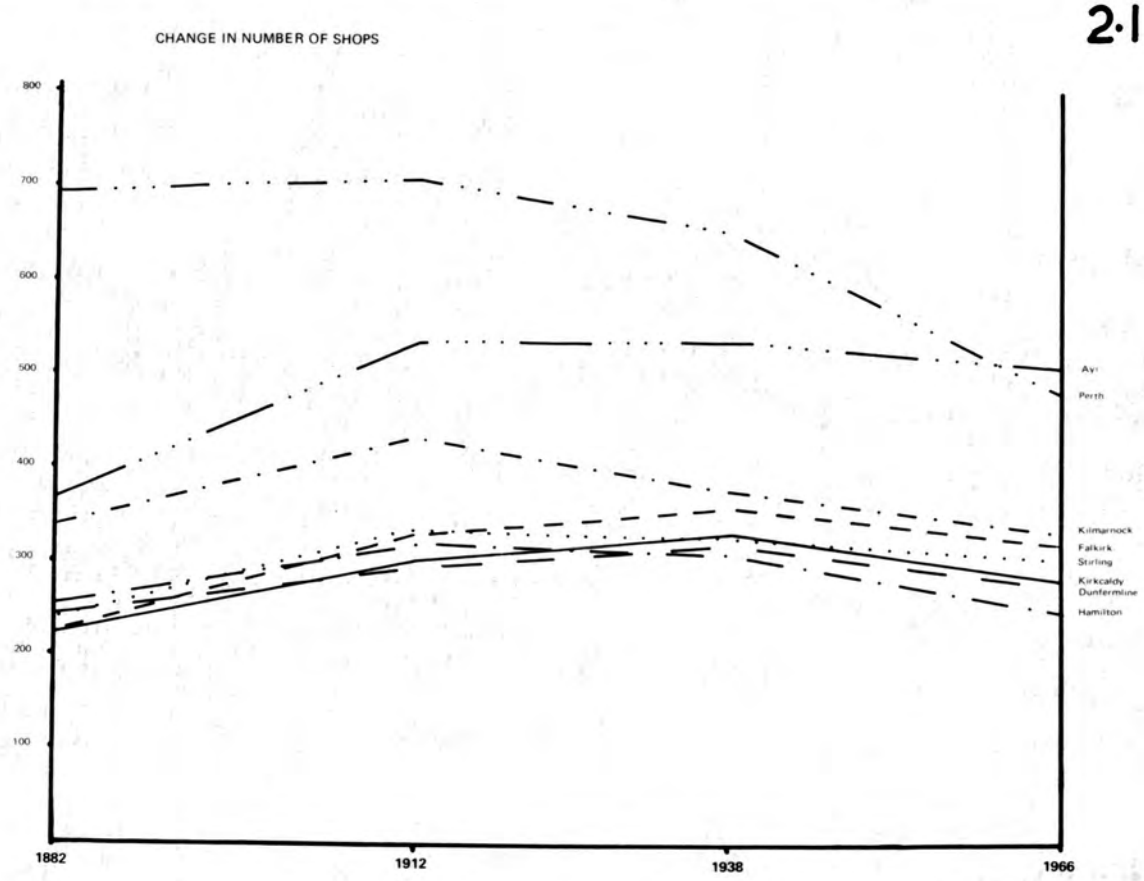
Before drawing conclusions on the scale and form of development in the selected central areas, it is valuable to look briefly at their changing function.

A study of the number of rating subjects in each land use in each centre at any point in time provides a reasonably dependable method of comparing the relative level of provision of that land use, while change in the number of subjects through time offers a crude measure of the changing importance of each activity and also of the changing function of the central area.

Throughout the study period, three land uses have dominated the central area, namely retail, offices and residential. Diagrams 2.1, 2.2 and 2.3, show the number of shops, offices and houses in each of the central areas (1966 boundary) at 1882, 1912, 1938 and 1966.

Three different trends can be identified from the graphs. In the case of retailing, the pattern is one of growth in all towns up to 1912, a mixed pattern between 1912 and 1938, which can best be described in overall terms as a levelling off in the rate of growth and a decline in all towns since 1938.

2.1

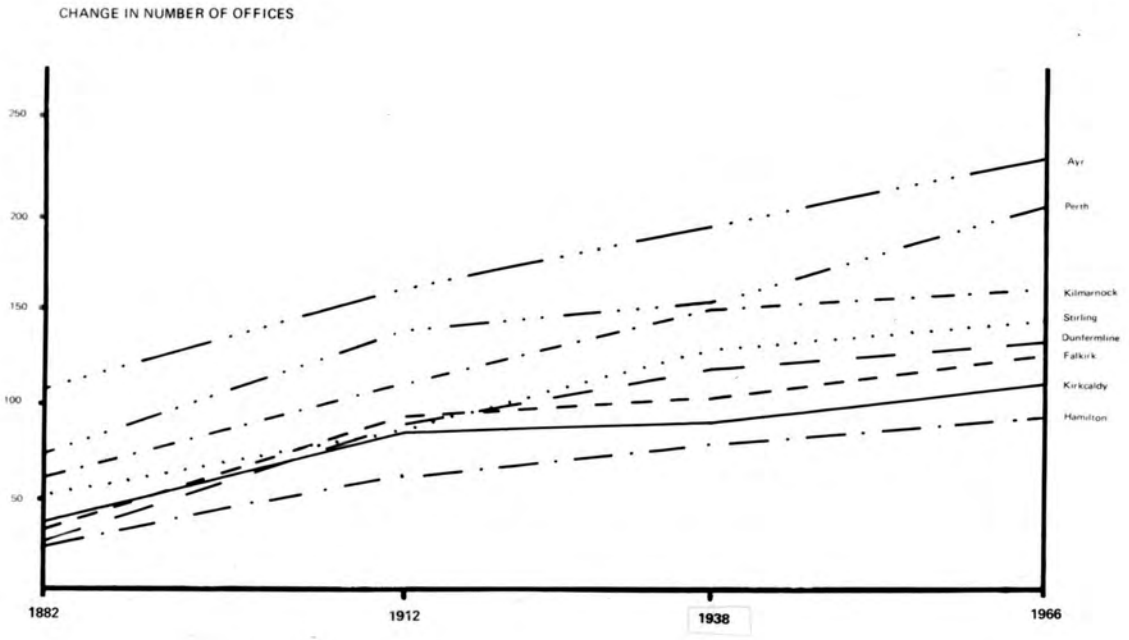


It should be clearly pointed out, however, that this post 1938 decline in the number of shops, while significant in terms of an appreciation of the factors influencing the physical change of the central area, does not indicate any decline in retail floor space or turnover, indeed these have increased substantially due to more intensive use of land within the existing retailing areas.

Although this thesis does not attempt a detailed investigation of the reasons for the relative level of service in each of the towns in the past, it is worthwhile noting that then, as now, the level of retail provision is related both to the urban population and to the population within the town's hinterland and in the more

isolated centres such as Perth, Ayr and Kilmarnock the high level of provision reflects their regional role. In the case of Perth, the town's early significance as a regional centre, and its resultant large urban population, gave rise to a very large number of retail outlets in 1882, but the more rapid increase in population in and around most of the other centres during and since the industrial revolution has resulted in the differential being greatly reduced and indeed Ayr, with its regional, industrial and recreational roles, now has a higher number of outlets.

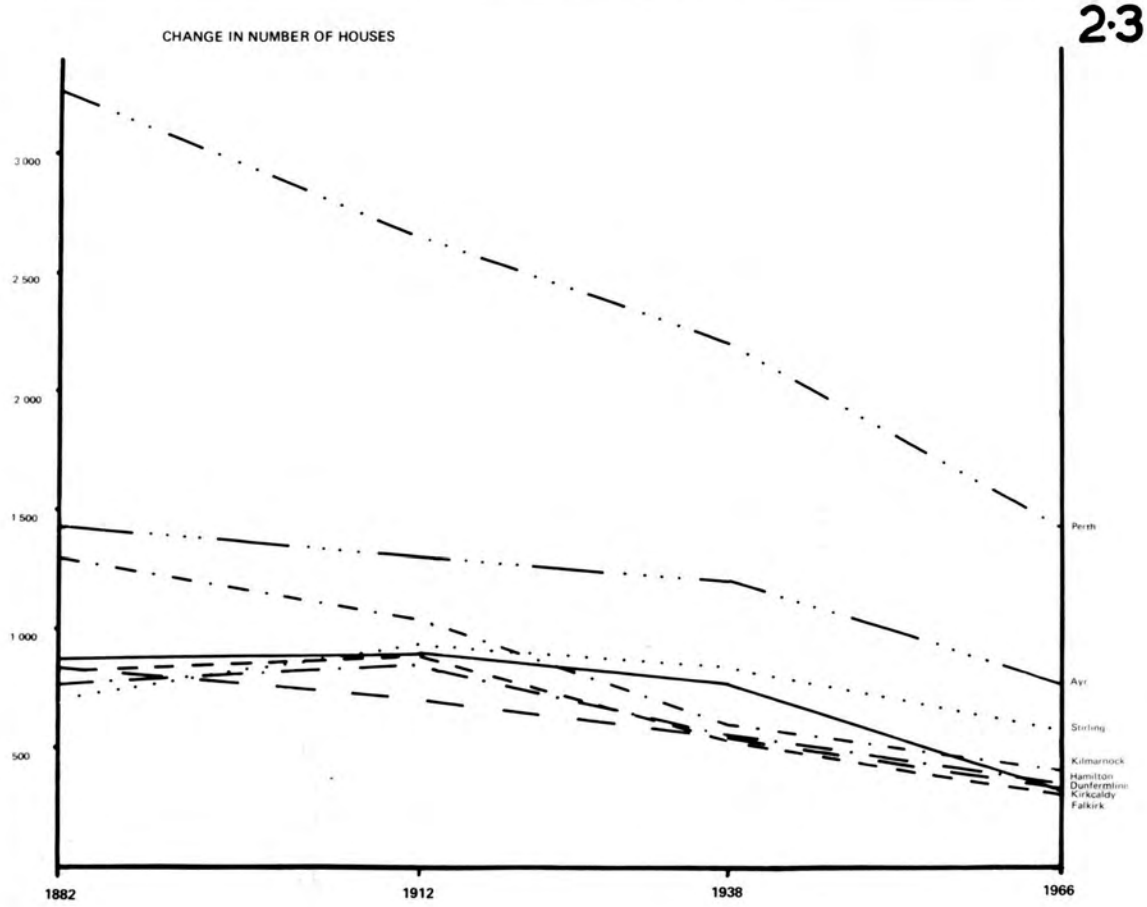
2·2



Offices show a different trend in that there has been a marked growth in their number throughout the period with the most rapid growth occurring in the pre 1912 period. Again, the increase in actual numbers does not tell the full picture as there has been an even faster

growth in office floor space throughout the period due to a trend towards larger office premises, often by amalgamation of smaller offices. The graph demonstrates that the relative importance of the eight towns as office centres has changed little since 1882, with the more important regional office centres of Ayr and Perth becoming even more important in recent years.

2·3



The trend in the number of houses has been very much a declining one, especially in the early established regional centres of Perth, Ayr and Kilmarnock. In these towns most of the area included in the 1966 central area boundary was built up by 1882 and, throughout

the period since, there has been much redevelopment and conversion of residential property to central area land uses. The case of Perth best shows this increased intensity of central area land use in that the extent of the central area has not increased markedly since 1882 yet the number of residential properties has almost halved. In the industrial towns, where much of the urban growth came in the late 19th and early 20th centuries there was an increase in the number of houses within the boundary of the 1966 central area through the development of housing on the periphery of the historical centre. This was almost wholly complete by 1912 and since that date the number of houses has declined sharply, through conversion to central area uses or redevelopment for these purposes.

No other land use approaches these three main uses in terms of number of subjects and indeed the total number of other land uses including public houses, hotels, clubs, meeting halls, clinics, garages, libraries and wholesale and industrial establishments is seldom more than the total number of office premises. Looking at the group as a whole, however, it is notable that they have played an increasing role within the central area, both in terms of their proportion of central area activity, and in terms of the area of land they occupy. Up to 1938, the main growth in these other uses was in social facilities such as meeting halls, places of entertainment, including billiard and dance halls, picture houses and theatres, libraries and public houses. Since then, the major increases have been in service activities, such as restaurants, surgeries and dry cleaners, and in activities related to the increasing use of the motor car, i.e. garages, showrooms and car parking. While the number of places of commercial entertainment has declined slightly since 1938, other

social activities, for example political and non-political clubs, have increased.

PHYSICAL GROWTH OF THE CENTRAL AREA

The most significant feature of the development of the central areas of the towns being studied is the more or less continuous growth in their total area. While several of the towns have had areas of discard during at least one of the periods of study, in no case is the area of discard greater than the area of assimilation and in all towns there has been an overall growth in every period, albeit slight in some cases. While the rate of growth has varied between the towns, the general pattern was for modest expansion between 1882 and 1912 and more substantial expansion since with no apparent slowing down in recent years. This latter point is particularly significant in terms of the current redevelopment plans for towns of this size in that substantial additional land, especially for developments related to the increasing use of the motor car, will have to be made available if the central area is to function efficiently. While expansion of the central area has been continuous, the reasons for the assimilation of additional land and the form of this assimilation have changed significantly.

In 1882, retailing was the dominant central area land use and the extent of the central area was strongly related to the extent of retailing along the main thoroughfares. Many other land uses were present but other than offices they did not occupy a great amount of space.

The growth between 1882 and 1912 was mainly due to increases in retail outlets in the main shopping streets.

The increase in office use during this period was largely accommodated within the central area, as it existed in 1882, while the increase in other land uses gave rise to few significant zones of assimilation.

Between 1912 and 1938 additional retail floor space, while still required, was not a dominant factor in the expansion of the central area, additional office, entertainment and social land uses being equally important. Accordingly the form of expansion was different in that in addition to some continued retail expansion along the main routes leading to the point of maximum accessibility, there was substantial assimilation of land behind and between the main retail frontages and also a movement of office uses into the better quality residential fringe, particularly in Ayr, Hamilton, Perth and Stirling.

The main post 1938 expansion has been caused by the growth of activities other than retailing. In this period increases in retail floor space have been largely accommodated within the existing retail areas by more intensive use of land, both by horizontal and vertical expansion of retailing within plots, and by modernisation and increased efficiency. Two main forms of expansion can be identified in this period, both of which were present in the earlier period. The first of these was the extension of office activities into suitable housing on the periphery of the central area, while the second was the continued consolidation of the central area by the extension of other land uses into the secondary streets behind the main retail frontages.

FACTORS ENCOURAGING PHYSICAL CHANGE IN THE CENTRAL AREA

The investigation of physical change in the central area

development demonstrates that the form of change is strongly related to the type of land use being considered and, in general, three main groups of land use with particular requirements can be identified. The first of these includes retailing, restaurants, banks, selected offices, e.g. building societies, and selected services, e.g. dry cleaners. This group, as will be shown in more detail in Section 3, is strongly tied to the main pedestrian and vehicular flows and, especially in the past, has been fairly sensitive to changes in the volume and direction of these flows. In 1882 these were mainly located along the main through routes. Since then, the increasing demand for retail type locations has led to an extension of these activities further along the main streets and, to a certain extent, into secondary streets leading from them. The main directions of growth have tended to be strongly tied to the direction of increased pedestrian flow while in some local areas, where the relative pedestrian flows have declined, there have been small areas of discard. In most cases the increase in pedestrian and vehicular movements has been caused by new residential developments but in some cases the development of transportation termini, in particular bus termini, have had a similar though less marked effect.

The second type of activity includes commercial and non-commercial offices and selected social facilities such as political and non-political clubs and certain medical surgeries. These land uses are located both within the core of the central area and in peripheral sites with their actual location in any town depending greatly on the total pressures for and availabilityd of suitable premises. The tendency has been for these activities to locate initially in the core of the central area and, as the total number increases and the

pressures for sites rises, there has been a movement to the periphery of the central area. In all cases this movement has been concentrated on a few localities where there were premises suitable for conversion to office use with, in many cases, land for expansion. These conditions have been best met in Victorian terraced and detached houses. The towns with the largest number of offices,i.e.Perth and Ayr, have very marked office areas and show an early development of these areas while the towns with fewer offices tend to have less developed peripheral office areas and much of the development has been in the post 1938 era.

An important conclusion which must be drawn from this analysis is that the pressures for peripheral office development are present in all medium sized towns and these pressures are increasing and must be recognised in redevelopment plans. At the same time,however, central office space is still required and will also need to be provided.

The final group of activities is the wide range of land uses such as service industries, entertainment and social facilities. These land uses seek the relatively cheap sites within easy access of the main pedestrian flows and their development has resulted in the filling out of the shape of the central area, particularly in areas of poor quality housing which have been developed either directly by conversion or by clearance and reconstruction.

It is important to recognise the role these activities play and their locational requirements as they tend to suffer most during comprehensive redevelopment. Many of these activities require a central site to operate effectively and it will be necessary to provide alternative facilities if they are to continue and the central area is to fully fulfil its commercial and social roles.

CONSTRAINTS TO CENTRAL AREA DEVELOPMENT

Having identified these 3 groups of activities, the factors influencing their development and the form this development takes, it is desirable to draw some conclusions about the physical and social factors which have constrained the development of the central area on the lines indicated above. The range of physical and social constraints which were investigated all played a greater or lesser role in some of the towns being studied. For convenience the two groups of factors are looked at separately.

PHYSICAL CONSTRAINTS

Major physical features such as the sea in the case of Kirkcaldy, the Clyde flood plain in the case of Hamilton and the River Tay in the case of Perth have had the most significant influence in constraining the expansion of the central area as they present a more or less insurmountable physical barrier. At the same time they restrict the need for expansion by severely limiting the pedestrian population which approaches the central area from their direction. Substantial, but not so great, physical barriers such as the rivers in Ayr and Kilmarnock, the Cadzow Valley in Hamilton and major relief features in Dunfermline and Falkirk have all been of significance in restricting development to a greater or lesser extent throughout the study period. These features are not, however, insurmountable barriers to central area expansion and where the factors encouraging expansion are sufficiently strong e.g. major housing development, location of an important bus station or housing suitable for conversion to offices, the influence of these physical constraints can be greatly reduced. Lesser relief features have

not been of major significance in constraining the central area although their effect on the development of street patterns, like that of more substantial relief features has played a significant part in giving the central area its present form.

SOCIAL CONSTRAINTS

The social factors which have been the greatest barrier to central area expansion have been the major open spaces on the periphery of the central area, such as the Pittencrief Park in Dunfermline and the North Inch in Perth, and the major industrial features such as railway land in Stirling and Ayr. These major features have discouraged the expansion of the central area by limiting the possibility of developing premises suitable for central area use, by limiting the pedestrian flows from their direction and, in the case of industrial premises, by providing an environment which discourages all except the weakest central area uses. Once again, however, it can be seen that less substantial social constraints, such as the industrial sites of Pullers in Perth and the brewery in Falkirk or the railway viaduct in Kilmarnock, while significant in discouraging expansion throughout the study period, have not acted as an absolute barrier to development where the factors attracting growth in their direction have been sufficiently strong.

PHYSICAL FORM OF THE PRESENT CENTRAL AREA

SHAPE AND SIZE

Section 2 has demonstrated that accessibility is the major factor influencing the location and form of the central area of medium sized towns, as indeed has been shown to be the case in towns in a wide size range in

other industrialized countries. The importance of this factor led Burgess to develop his concept of the central area being basically circular in shape with its centre being at the point of maximum accessibility. On the basis of practical studies in the United States, this concept was modified by Hartman[1] who considered that the idealized shape of the central area was a star and that variations from this shape were the result of local factors.

Murphy and Vance in their studies identified three basic C.B.D. shapes, firstly a quadrate cross, where there are fairly equivalent intersecting streets, secondly an elongated C.B.D., where there is a dominant single street and thirdly, a block-like C.B.D. where parallel streets exceeding in importance any crossing streets.

While the present study in no way invalidates the idealized shapes proposed by Burgess and Hartman, it does provide more support for the three basic shapes identified by Murphy and Vance. Each of the central areas can, with some degree of licence, be allocated to one of their basic shapes. Falkirk, Hamilton and Stirling can be seen to fall within the first shape, the quadrate cross, although in no case is the shape close to the idealized shape. Ayr, Dunfermline, Kilmarnock and Kirkcaldy have one major axis of retail development and fall within Murphy and Vance's second category while Perth is clearly in their third type, being very blocklike in character.

Although it is possible to fit each of the towns into the three basic shapes identified by Murphy and Vance, it is considered that local factors,particularly the relationship between the Peak Land Value Intersection

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1. G.W.Hartman "The Central Business District - A Study in Urban Geography". Economic Geography, Vol.26, No.4, 1950.

and the main population concentrations, have such an important influence on the shape of the central area of medium sized Scottish towns that it is not particularly profitable to hypothesise idealized shapes. It can be seen, therefore, that no firm conclusions can be made from this study as to a likely form of development in any centre, as this will depend on the interaction of all the factors attracting and constraining the development of the central area and indeed the land use which is constraining development today may well be the opportunity for development tomorrow. Railway sidings which were constraints in the past are currently prime redevelopment sites, for example in Ayr, and Hamilton, while industrial land such as the brewery in Falkirk and the carpet factories in Kilmarnock, can offer major redevelopment opportunities at the current time. Although no generalised conclusions can be made as to the likely form of development in any centre, a thorough understanding of the factors creating change within the central area and a detailed knowledge of the local situation allows a meaningful forecast of the pressures for change and allows proper arrangement to be made to satisfy these pressures.

SECTION 3

DISTRIBUTION OF LAND USE WITHIN THE CENTRAL AREA

In this section of the thesis the current patterns of land use within the 8 central areas are considered. The main aim of the section is to gain an appreciation of the geographical distribution of land uses within the central areas of medium size towns and to gain some understanding of the forces creating these distributions.

Whereas in the section on the historical development of the central areas, it was convenient to consider each town separately and then draw general conclusions. In this section it is advantageous to deal with each land use separately and then to give general conclusions on the geographical distribution of the main land use classes and on the patterns in each of the towns.

The distribution of individual land uses was initially mapped at the 25 miles to the inch scale and the mean point calculated. In identifying the mean point of each land use no attempt was made to weight individual occurrences by, for example, floor space, each occurrence being considered equal. The mid point on the principal street frontage was taken to represent the subject in the calculations. The mean point of all central area land uses, the Central Area Mean Point (C.A.M.P.) was calculated in a similar manner. In order to analyse the distribution of the individual land uses, the proportions of each land use within 100 yards, 150 yards and 200 yards radii of both the Central Area Mean Point and the Peak Land Value Intersection[1] were calculated. The choice of zones based on radii rather than on walking distance was made after an initial analysis indicated that the differences in the results were slight, while the former was very much easier to use.

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1. For a definition of the Peak Land Value Intersection see p. 139.

The results of this analysis are shown for the aggregate of the eight towns in Table 3.2.

To further aid the analysis of the distribution of retailing establishments, the average distance from the mean point of each land use has been calculated and the average distances for each of the towns is shown in Table 3.3. In comparing the situation in different towns it is not particularly useful to compare absolute distance as this value is greatly influenced by the size and shape of the individual central areas. To overcome this problem the average distances have been ranked for retail and office uses. Table 3.4 shows the rank position of each land use in each town and also the aggregate position for all eight towns.

The physical distribution of land uses, in particular in relation to the Central Area Mean Point and the Peak Land Value Intersection, allows some interpretation to be made of the reasons behind these distributions within the central area. A more direct means of understanding the pattern is, however, to be found from an analysis of the relationship between land use distribution and land values which has been shown in many previous studies to directly reflect accessibility. While information on land values is not directly available, the records of the County Assessors provide an extremely valuable measure of land values in the rates which are applied to calculate the gross annual value of rating subjects. The Sorn Report[1] describes the gross annual value as "...the rent at which a hereditament might reasonably be expected to let from year to year if the

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1. "Report of the Scottish Valuation and Rating Committee", Parliamentary Reports: 1953-1954, Vol.18.

tenant undertook to pay all usual tenant rates and taxes and if the landlord undertook to bear the cost of repairs and insurance, and the other expenses, if any, necessary to maintain the heriditament in a state to command that rent." As there is only limited evidence of such rents, due to such reasons as owner-occupation of commercial premises and long leases, the assessors apply the evidence that is available to other properties on the basis of standard rates for each part of the town.

In the case of retail type premises the standard rate relates to the first 30 feet in depth of the ground floor. Other floors or floor space behind the first 30 feet, are calculated at increasingly smaller proportions of the standard rates. In applying the standard rate to any premises, account is taken of such features as the size, situation, structural conditions, availability of access at rear and planning and layout. As the standard rate is only recorded in the files in a few of the towns, it has been necessary to use the actual rate in this analysis. The rate applied is normally within 5 per cent and seldom more than 10 per cent of the standard rate and it is considered that the use of the actual rate does not greatly affect the result of the analysis. The actual rate is referred to in this thesis as the frontage value and frontage values have been used to locate the Peak Land Value Intersection, the intersection at which land values as reflected in frontage values reach their highest point. Offices, where they are not in retail typee locations, e.g. banks or building society premises on main shopping streets, are assessed at a lower rate and on the basis of an overall rate applied to each floor of the building, the rate applied decreasing with height.

The method used to relate land use to frontage values was to calculate the proportion of each land use within 0 to 24 per cent, 25 to 49 per cent, 50 to 74 per cent, 75 to 87 per cent and 87.5 to 100 per cent of the peak land values. The proportion of office premises which lie above the 25 per cent level is small as, except for banks, few offices locate on the ground floor in highly rated areas. Table 3.5 which shows the proportion in each zone in the aggregate for all towns has thus been confined to activities which are generally located in ground floor premises in shopping streets.

Maps 3.1 to 3.8 show generalized frontage values in the eight central areas. The peak values in each town are Stirling 20/-, Dunfermline 21/-, Ayr, Falkirk, Kilmarnock, Kirkcaldy and Perth 25/- and Hamilton 35/-.

In comparing the locational characteristics of each land use, it is convenient to consider at the same time the level of provision in each town (Table 3.1) and also their size characteristics.

TABLE 3.1.
NUMBER OF SUBJECTS IN EACH LAND USE CATEGORY

Land Use	AYR	DUNFERMLINE	FALKIRK	HAMILTON	KILMARNOCK	KIRKCALDY	PERTH	STIRLING
Newsagents	20	7	8	5	7	2	15	11
Confectioner	4	9	4	4	9	4	31	7
Butcher	19	7	12	8	10	5	17	10
Grocer	18	17	22	27	20	12	32	22
Greengrocer	14	10	2	6	4	8	14	8
Baker	15	8	12	9	9	11	16	6
Fishmerchant	9	3	2	3	4	4	8	3
All Convenience Retail	99	61	62	62	63	46	133	67
Shoe	16	7	15	10	10	13	14	8
Men's Tailors	19	10	8	8	10	8	10	14
Women's Tailors	15	14	9	4	5	8	22	15
Other Clothing & Drapery	64	23	55	37	44	33	43	16
Furniture	24	15	17	15	24	15	21	16
Hardware	6	7	7	5	6	9	10	5
Variety	2	1	2	1	2	4	2	2
Department	2	1	3	1	2	1	1	2
Electrical	15	10	16	16	17	16	23	12
Paper and Paint	10	12	9	9	10	9	6	12
Office Equipment	2	4	1	1	1	0	0	1
Leather Goods	4	6	1	2	2	3	2	1
Tobacconist	6	3	1	2	3	4	3	3
Antiques	2	4	3	1	1	1	8	4
Jeweller	10	8	4	4	2	6	9	4
Music	3	1	3	3	0	2	4	2
Sports	6	2	8	2	4	4	4	2
Camera	2	3	0	1	2	1	1	1
Cycle	5	3	2	2	2	2	4	2
Book	3	2	2	1	2	4	4	2
Chemist	11	8	4	5	8	5	9	10
All Durable Retail	227	144	170	130	157	147	200	134
Other retail use (Unclassified)	20	17	8	5	7	12	18	12

cont..

Table 3.1. cont.

	AYR	DUNFERMLINE	FALKIRK	HAMILTON	KILMARNOCK	KIRKCALDY	PERTH	STIRLING
Vet	1	1	0	1	1	0	0	1
Chiropodist	3	3	3	2	3	2	3	1
Optician	3	6	3	2	2	5	4	3
Doctor	7	5	2	3	3	2	3	3
Dentist	6	7	5	4	4	4	5	7
All Medical Services	20	22	13	12	13	13	15	15
Finance and Insurance	44	24	29	27	23	30	32	17
Bank	17	10	9	9	10	8	18	9
Legal	13	12	8	6	12	6	14	4
Other professional	18	11	12	6	12	10	15	12
General Business	50	24	27	21	29	25	64	32
National Government	6	7	6	2	2	6	5	5
Local Government	9	6	9	5	11	4	10	9
Betting Officer	12	5	3	6	6	3	8	5
All Offices	170	99	97	82	105	92	166	93
Photographer	4	3	1	1	0	2	3	2
Hairdresser	22	13	10	11	17	14	23	15
Cleaner	10	7	6	4	9	5	10	4
Shoe Repairer	4	7	5	5	7	2	8	5
Skilled Trades	22	5	10	13	16	10	12	12
All Services	62	35	32	34	49	33	56	36
Religious Institution	12	9	9	9	14	10	17	13
Garage	21	5	7	5	9	6	13	7
Wholesale Warehouse	9	4	3	6	9	6	9	0
Entertainment	11	6	6	6	5	6	5	4
Restaurant/Cafe	35	18	19	13	15	13	24	12
Public House	26	16	13	26	19	14	21	11
Hotel	8	6	3	4	4	2	14	7
Other Central Area Uses	122	64	60	69	75	57	103	54

The numbers of shops and offices in this table are not the same as those in Section 2. Many of the subjects included as Restaurants, Services and Medical Services in this table are listed as shops in the Valuation Rolls while others, e.g. certain of the skilled trades and dentists, are considered as Offices in the Valuation Rolls.

TABLE 3.2

PROPORTION OF LAND USE BY ZONES FROM THE CENTRAL AREA MEAN POINT AND THE PEAK LAND VALUE INTERSECTION

	Distance from C.A.M.P.				Distance from P.L.V.I.			
Retail Uses	0-100 yards	100-150 yards	150-200 yards	0-200 yards	0-100 yards	100-150 yards	150-200 yards	0-200 yards
Convenience								
Newsagent	11	7	11	29	8	7	10	25
Confectioner	13	6	13	32	10	11	10	31
Butcher	20	10	16	46	19	9	12	40
Grocer	18	11	15	44	13	10	15	38
Greengrocer	23	11	10	44	12	7	19	38
Baker	23	11	16	50	23	21	16	60
Fishmerchant	10	12	15	37	12	6	17	35
Durable								
Shoe	37	22	16	75	28	17	14	59
Men's Tailor	36	17	22	75	51	16	10	77
Women's Tailor	28	26	15	69	30	17	17	64
Other Clothing & Drpr.	20	10	21	51	19	10	18	47
Furniture	16	16	16	47	20	14	12	46
Hardware	13	11	13	37	13	7	16	36
Variety	63	19	6	88	45	18	12	75
Department	27	16	16	59	27	16	0	43
Electrical	9	14	21	44	16	6	18	40
Paper & Paint	14	17	14	45	17	8	9	34
Office Equipment	10	0	20	30	10	10	10	30
Leather Goods	10	38	10	58	14	14	24	52
Tobacconist	20	20	8	48	20	16	16	52
Antiques	4	17	21	42	4	8	17	29
Jeweller	23	17	13	53	28	4	17	49
Music	32	11	0	44	5	11	26	42
Sport	19	6	6	31	13	9	19	41
Camera	9	0	45	54	36	0	9	45
Cycle	13	0	30	43	25	0	25	50
Books	22	0	30	52	17	9	17	43
Chemist	25	13	15	53	20	20	15	55

Table 3.2 cont.

	Distance from C.A.M.P.				Distance from P.L.V.I.			
	0-100 yards	100-150 yards	150-200 yards	0-200 yards	0-100 yards	100-150 yards	150-200 yards	0-200 yards
Office Uses								
Medical	10	11	11	32	12	10	10	32
Finance & Insurance	16	14	10	40	12	10	16	38
Bank	25	12	21	58	16	12	20	48
Legal	24	13	13	51	15	12	17	44
Other Professional	17	14	10	41	17	6	15	38
General Business	10	13	11	34	11	9	12	31
National Government	12	12	21	44	7	3	11	21
Local Government	8	15	21	44	11	9	15	35
Betting Office	8	15	8	31	17	10	15	42
Services								
Skilled Trades	9	10	10	29	10	11	8	29
Photographer	19	6	19	44	13	13	13	38
Hairdresser	15	8	10	33	11	13	16	41
Dry Cleaner	13	16	16	45	13	15	15	43
Shoe Repairer	18	14	16	48	23	9	14	45
Other Main Central Area Uses								
Religious Institutions	10	10	17	37	4	14	10	28
Garages	4	5	10	19	3	8	6	16
Wholesale Warehouse	9	11	22	41	15	7	4	26
Entertainment	6	16	20	43	10	18	12	40
Restaurant/Cafe	15	11	13	40	19	5	17	41
Public House	11	15	18	43	13	14	14	40
Hotel	16	7	19	42	16	12	14	42

TABLE 3.3

AVERAGE DISTANCE* FROM MEAN POINT OF EACH LAND USE

TOWN	AYR	DUNFERMLINE	FALKIRK	HAMILTON	KILMARNOCK	KIRKCALDY	PERTH	STIRLING
Newsagent	5.6	2.1	3.5	2.6	4.8	1.9	4.8	3.6
Confectioner	5.5	2.7	1.9	1.6	3.3	3.6	3.8	3.1
Butcher	5.7	2.3	1.7	3.2	4.4	4.4	3.2	4.4
Grocer	3.9	2.5	2.7	3.6	3.3	4.1	3.6	3.1
Greengrocer	4.7	2.4	2.6	2.6	5.1	3.8	2.6	3.8
Baker	5.5	2.1	2.4	2.2	2.5	3.0	3.6	3.0
Fishmerchant	5.0	1.2	2.5	1.8	2.3	1.9	2.2	1.9
Shoe	3.4	1.4	1.5	1.0	2.0	2.4	2.5	2.4
Clothing Male	3.8	1.3	1.6	0.7	1.3	1.0	2.2	1.0
Clothing Female	4.6	2.2	1.6	1.0	1.1	2.5	2.8	2.5
Non specialized Clothing	3.7	3.2	2.5	2.2	3.5	4.6	2.9	4.6
Furniture	3.7	3.1	2.3	3.6	3.6	4.3	3.5	3.3
Hardware	4.2	2.5	1.9	3.0	6.3	4.3	2.7	4.3
Variety	0.4	0.0	1.0	0.0	0.7	1.1	0.0	1.1
Department	7.5	0.0	1.8	0.0	0.6	0.0	0.5	0.0
Radio/TV/Electrical	3.6	2.7	2.9	2.7	3.7	4.4	3.3	4.4
Paper and Paint	3.8	3.1	2.4	3.6	3.2	4.9	3.5	4.9
Office Equipment	1.6	2.7	0.0	0.0	0.0	0.0	-	0.0
Leather Goods	4.7	2.4	0.0	2.3	2.1	1.8	1.5	1.8
Tobacconist	2.0	2.9	0.0	1.3	3.2	1.5	2.3	1.5
Antiques	8.1	1.4	3.1	0.0	0.0	0.0	2.3	0.0
Jeweller	4.0	2.6	2.1	2.1	4.7	4.4	3.0	4.4
Musical	2.1	0.0	1.6	1.5	-	0.1	2.6	0.1
Sport	5.5	0.7	2.5	0.9	4.5	3.7	3.0	3.7
Camera	5.3	2.5	0.0	0.0	4.3	0.0	0.0	0.0
Cycle	3.3	0.6	1.2	-	2.4	0.6	2.5	0.6
Books	2.4	2.7	0.2	1.8	2.3	3.4	3.0	3.4
Chemist	5.0	2.0	2.1	2.8	2.4	3.4	2.8	3.4

cont..

Table 3.3 cont

	AYR	DUNFERMLINE	FALKIRK	HAMILTON	KILMARNOCK	KIRKCALDY	PERTH	STIRLING
Offices								
Medical	3.7	2.3	2.2	3.1	3.7	3.0	4.3	3.0
Finance & Insurance	5.0	1.9	2.0	3.5	3.2	2.8	4.0	3.1
Banks	4.8	1.3	1.9	2.5	2.1	2.0	4.1	1.8
Legal	3.0	2.1	2.0	2.1	1.8	2.4	3.8	2.3
Other Professions	4.5	2.7	3.1	3.9	2.8	2.2	3.3	3.2
General Business	4.8	2.2	3.0	2.3	3.6	4.3	4.5	4.0
National Government	4.4	2.4	4.0	3.2	2.0	2.7	5.2	1.7
Local Government	3.4	1.9	3.4	3.5	2.8	1.7	4.0	4.4
Betting Office	3.9	1.9	1.9	2.0	3.8	4.2	3.3	4.8
Services								
Skilled Trades	4.5	1.8	2.8	3.8	3.8	3.6	3.9	2.9
Photographer	4.3	3.5	0	0	0	1.7	1.1	0.6
Hairdresser	5.1	2.8	2.5	3.8	3.4	4.9	4.0	3.7
Dry cleaner	4.8	2.1	3.0	3.0	4.1	3.7	3.5	3.8
Shoe repairer	2.7	2.9	1.9	3.5	2.5	1.2	3.1	2.8
Other Main Central Area Uses								
Religious Institution	4.3	1.9	3.5	4.3	3.0	3.9	4.6	4.1
Garage	7.1	2.0	4.9	3.7	3.9	5.4	3.9	2.6
Wholesale Warehouse	5.3	2.0	1.0	3.2	2.5	4.3	4.0	0
Entertainment	4.5	1.5	3.0	1.3	4.6	3.6	2.3	3.8
Restaurant/Cafe	4.2	2.2	2.7	2.8	4.5	4.4	3.8	3.2
Public House	4.8	2.5	2.7	2.9	4.7	4.7	4.0	3.5
Hotel	4.1	2.2	2.0	2.3	3.0	4.8	5.7	2.1

*Distances are measurements in inches on 25" to 1 mile O.S.Maps

TABLE 3.4

AVERAGE DISTANCE FROM MEAN POINTS. RANK BY INDIVIDUAL CENTRAL AREA AND OVERALL RANK FOR ALL CENTRAL AREAS

TOWN	AYR	DUNFERMLINE	FALKIRK	HAMILTON	KILMARNOCK	KIRKCALDY	PERTH	STIRLING	RANK FOR ALL CENTRAL AREAS
Retail									
Newsagent	25	9	24	14	22	7	23	23	28
Confectioner	22	19	10	7	13	15	22	19	19
Butcher	26	11	8	19	19	22	17	15	22
Grocer	13	14	21	22	14	18	21	18	25
Greengrocer	17	13	20	15	23	17	10	21	22
Baker	24	8	15	12	11	12	20	20	17
Fishmerchant	19	3	19	8	8	7	3	17	11
Shoe	7	5	4	4	5	9	7	6	3
Clothing Male	12	4	6	1	4	3	3	12	2
Clothing Female	16	10	7	3	3	10	12	9	8
Non specialized clothing	9	24	17	11	15	23	13	10	18
Furniture	9	24	14	21	16	11	19	13	19
Hardware	15	16	11	18	24	19	11	14	21
Variety	1	0	2	0	2	4	0	2	1
Department	27	0	9	0	1	0	1	7	8
Electrical	8	20	22	16	17	21	15	22	25
Paper and Painting	11	23	16	20	12	24	15	16	24
Office Equipment	2	20	0	0	0	0	-	0	12
Leather Goods	17	12	0	13	6	6	2	0	10
Antiques	28	6	23	0	0	00	5	3	13
Jeweller	14	17	12	10	21	20	16	11	15
Musical	4	0	15	6	-	1	9	5	4
Sport	23	2	18	2	20	16	14	8	14
Camera	21	14	0	0	18	0	0	0	27
Cycle	6	1	1	-	9	2	8	24	5
Books	5	18	3	9	7	13	14	1	7
Chemist	20	7	13	17	10	14	13	17	16
Tobacconist	3	22	0	5	12	5	6	4	6

cont..

Table 3.4 cont..

	AYR	DUNFERMLINE	FALKIRK	HAMILTON	KILMARNOCK	KIRKCALDY	PERTH	STIRLING	RANK FOR ALL CENTRAL AREAS
Office Uses									
Medical	3	7	5	5	8	8	1	5	8
Finance & Insurance	9	2	3	7	6	6	4	5	5
Bank	7	1	1	4	3	2	6	2	2
Legal	1	5	3	2	1	4	3	3	1
Other Professional	6	9	7	9	4	3	1	6	6
General Business	7	6	6	3	7	9	8	7	9
National Government	5	8	9	6	2	5	9	1	6
Local Government	2	2	8	7	4	1	4	8	4
Betting Offices	4	2	1	1	9	8	1	9	3

- No subject in this category
O Only one subject in this category

TABLE 3.5

PROPORTION OF LAND USE BY FRONTAGE VALUES

	0-24.9%	25-49.9%	50-74.9%	75-87.4%	87.5%-100%	75-100%
Convenience Retail						
Newsagent	47	28	16	4	4	8
Confectioner	33	30	18	7	12	18
Butcher	18	32	30	8	9	17
Grocer	29	27	20	7	16	23
Greengrocer	21	42	19	10	7	18
Baker	22	35	17	7	18	26
Fishmerchant	22	33	22	4	19	22
Durable Retail						
Shoe	4	14	26	12	44	56
Men's Tailors	4	10	25	16	45	62
Women's Tailors	7	20	27	13	34	46
Other clothing & draper	28	38	11	8	14	22
Furniture	30	34	17	6	14	20
Hardware	27	31	25	4	13	17
Variety	0	0	0	0	100	100
Department	8	15	15	23	38	62
Radio/TV/electricity	30	30	20	6	13	19
Paper & paint	45	25	17	7	6	13
Office Equipment	72	7	7	0	14	14
Leather Goods	26	26	19	15	15	30
Tobacconist	12	46	8	8	25	33
Antiques	54	32	4	7	4	13
Jeweller	8	34	25	6	28	34
Music	50	29	7	7	7	14
Sport	41	31	17	3	7	10
Camera	25	50	13	0	13	13
Cycle	38	32	11	5	16	21
Books	44	17	26	4	9	13
Chemist	17	19	36	12	16	28
Services						
Skilled Trades	88	5	3	3	1	4
Photographer	38	50	12	0	0	0
Hairdresser	60	28	8	2	2	4
Dry Cleaner	30	19	34	8	8	16
Shoe Repairer	30	30	17	8	15	24
Other Uses						
Bank	14	39	26	0	21	21
Restaurant/Cafe	37	35	16	5	7	12

DISTRIBUTION OF INDIVIDUAL LAND USES

Retail Land Use

In looking at the distribution of each retail land use in the eight central areas it is convenient to consider it in relation to three main types of retail location. Firstly there are the principal shopping streets, the High Streets in Ayr, Dunfermline, Falkirk, Kirkcaldy and Perth, Quarry Street in Hamilton, King Street and Portland Street in Kilmarnock and the Port Street/Moray Place/Barnton Street axis in Stirling. These streets are on main through routes, have the highest land values and contain the most accessible locations. The next type of retail locations are the secondary shopping streets such as Sandgate and Newmarket Street in Ayr, Vicar Street and Newmarket Street in Falkirk and Cadzow Street in Hamilton. At times it is useful to distinguish between the more accessible main secondary shopping street, identifiable by the higher frontage values in maps 3.1 to 3.8 and the other secondary shopping streets. The final type of retail location is where shops are scattered in streets in relatively inaccessible or unattractive locations, usually in office areas.

Newsagent

All shops selling newspapers were included in this category. It has to be recognized however that almost all newsagents sell other goods, usually confectionary and sometimes groceries, and their location is as much influenced by the requirements of the sale of those other goods as by the sale of newspapers.

Newsagents have among the smallest premises in the central area, seldom having more than 1000 square feet and normally in the order of 400-600 square feet of floorspace. Table 3.1 shows that most of the towns

have between 5 and 10 newsagents but that Kirkcaldy (2) has fewer and Perth (15) and Ayr (20) have appreciably more than the others.

The even spread of newsagent premises throughout the central areas of Stirling and Ayr, map 3.9, is typical of that in all eight towns, as might be expected in view of the nature of the business. This even spread is reflected in all the measures of dispersal. The "mean point of newsagents" is in all cases close to the central area mean point, newsagents have the highest rank score on distance from their own mean point and have very low proportions within 100 yards and indeed 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection.

The analysis of frontage values shows a similar pattern with almost one half of all the newsagents' premises being rated below 25 per cent of the peak valueand only 8 per cent being in premises rated at 75 per cent or more of the peak value.

The wide distribution of newsagents and their concentration in cheaper, less accessible, premises, while in part reflecting the relatively poor competitive position of newsagents in the search for good sites, is mainly due to the function they serve and the positive disadvantage of competition from similar establishments. Other factors which influence their distribution are the concentration of population on the fringes of the central area and the normal location of rail and bus termini and thus of commuters in the same locations.

Confectioner

Confectioners are in general the smallest shops in the central area, most falling in the 300 to 600 square feet range and few being over 1,000 square feet. The

number of confectioners varies widely among the eight towns but the most striking feature is the very large number in Perth (31) and the relatively high number in Dunfermline (9) and Kilmarnock (9). The low number in Ayr is almost certainly related to the very high number of newsagents, almost all of which sell confectionery.

The location of confectioners in Hamilton, Falkirk, Kilmarnock and Kirkcaldy is shown in map 3.10. The main feature of these distributions is the low proportion of confectioners in the more desirable parts of the central area. This feature is clearly shown in Table 3.2 which shows the proportion of confectioners within 200 yards of both the central area mean point and the peak land value intersection as being among the lowest of all retail land uses. It is interesting however to note that the rank position of confectioners in terms of their average distance from their mean point, Table 3.4 is not as high as might be expected from the above information. This reflects the contrast in distribution between the towns with few confectionery shops where there is a stronger tie to the more important shopping streets, although as stated above seldom the more expensive sites, and the wider distribution in those towns such as Kilmarnock where there are a large number.

The relationship between land use and frontage values shows that almost two-thirds of confectioners are located in premises rated at less than 50 per cent of the peak value and that while the proportion in the lower classes is not as high as that of newsagents, the figure is higher than for any of the other convenience land uses.

The distribution of confectioners is therefore fairly widespread throughout the central area with a concentration

in the less accessible locations. It is probable that this distribution is a result of both the inability of more than a few confectioners to support a truly central location and the fact that they depend for some of their trade on the local resident population.

Butcher

There is a very wide range in the number of butchers in the eight central areas with Kirkcaldy having appreciably fewer and Ayr and Perth substantially more than the remaining towns. Because of the considerable storage and preparation space required, butcher shops are fairly large in comparison to other shops selling convenience goods, most being in the range of 800 to 2,000 square feet.

Map 3.11 shows the distribution of butchers in Hamilton and Falkirk and the distributions shown here are representative of the situation in all eight towns. While a few butcher shops are located in the most desirable sites within the central area, the majority locate in the less accessible parts of the principal shopping streets and on the more accessible sites in secondary shopping streets.

Table 3.1 shows that butcher shops are second to bakers amongst convenience shops in the proportion of their number within 200 yards of both the Peak Land Value Intersection and the Central Area Mean Point. The absolute values and rank position on average distance from their own mean point however demonstrates that butchers are still fairly widely dispersed.

The frontage values information shows that only 17 per cent of butcher shops are located in sites within 25 per cent of the peak rate, one of the lowest proportions

of all retail land uses, while the proportion between 25 per cent and 75 per cent is one of the highest. The proportion below 25 per cent of the peak rate, 18 per cent, is still fairly high.

The above evidence demonstrates that butcher shops on the whole seek sites with good accessibility but that, due in part at least to their large space requirements, relatively few can achieve a peak location with the result that they are forced into secondary shopping streets close to the most accessible locations and into more peripheral locations on the principal shopping streets.

Grocer

The shops which have been included in this group cover a wide range from self-service stores to the more traditional specialised grocer shops and corner stores. Because of the range of types of outlet included under this heading, the size of individual stores varies widely from around 500 square feet to several thousand square feet, the majority however lying between 1,000 and 2,500 square feet. In general the larger stores and in particular the supermarkets are located in the more desirable locations. In most towns there are in the order of 20 grocer shops in the central area but in Kirkcaldy (15) there are fewer while Perth (36) has appreciably more than this number.

Grocer shops are well spread throughout the central area being represented in both the main retail street and in almost all of the other shopping streets. The wide distribution of grocers in Dunfermline and Perth, map 3.9 is typical of all the towns being studied.

The average rank score of the distance from the mean point of grocers is one of the highest while the mean

point itself is very close to the Central Area Mean Point, reflecting the wide and even dispersal around this point. Further evidence of the wide distribution is shown in Table 3.2 which shows that 18 per cent of grocers are within 100 yards and 44 per cent within 200 yards of the central area mean point while the proportion within similar distances of the Peak Land Value Intersection are slightly lower at 13 per cent and 38 per cent respectively. The analysis of frontage values also shows a wide range of premises from the more expensive central area sites, over 20 per cent of grocer shops have frontage values within 75 per cent of the peak land value, to the cheaper peripheral sites, almost 30 per cent of the shops are located in premises rated at under 25 per cent of the peak value.

The distribution of grocer shops is very much a reflection of the type of service they provide. In general the shops which can afford a more expensive main street location, and indeed require such a location for the efficient operation of their business, are the larger more efficient self-service stores and the old established, higher class grocers. Those shops are very largely dependent for their custom on people who shop or work in the central area and live elsewhere. The smaller grocer shops benefit from a location peripheral to the central area where they can then attract custom from people moving into and out of and working in the central area and at the same time serve the population living in and close to the central area.

Greengrocer

The number of shops selling mainly fruit and vegetables varies widely as can be seen in Table 3.1. The two towns showing the greatest number of outlets are the

two large regional centres of Ayr (14) and Perth (14) while Falkirk (2) and Kilmarnock (4) have the smallest number. The majority of greengrocer premises fall in the 1,000-2,000 square feet size range and there is not as wide a range as is to be found in grocer premises.

Map 3.11 shows the location of greengrocers in Kirkcaldy and Kilmarnock, the distributions being shown on the map being a fair reflection of the situation in all eight towns. While in all the towns studied one or more greengrocers, usually selling less common fruit and vegetables in addition to normal lines, are to be found in the more desirable locations, in general greengrocers locate on the cheaper sites in the principal shopping streets and in the more expensive sites in secondary shopping streets. This situation can be clearly seen in Table 3.5 which shows greengrocers as having the lowest percentage of all the convenience retail land uses falling within 0-24 per cent of the peak land value and the highest proportion in the 25-49 per cent classes.

The "mean point of greengrocers" is fairly close to the Central Area Mean Point, reflecting the even dispersal of greengrocers around the Central Area Mean Point. While the proportion located within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection are identical to that of grocers, Table 3.3 shows that the average distance from the "mean point of greengrocers" is slightly lower which when considered in relation to the lower proportion close to the Central Area Mean Point demonstrates the concentration in intermediate areas. The distribution of greengrocers is very similar to that of grocers with the more specialised and generally larger stores being located close to and on occasion

within the most expensive section of the principal shopping street and the other stores locating in less expensive sites. The relatively low proportion of greengrocers in peripheral, cheap sites, suggests that they cannot survive wholly on local trade, but require to attract trade from those working and shopping in the central area to survive and thus they require a reasonably accessible location.

Baker

Most of the central areas have between 8 and 12 baker's shops. Stirling with 6 has fewer than the others while Ayr with15 and Perth with 16 has appreciably more. While some of the baker's shops, particularly those with a purely retail function, are between 500 and 1,000 square feet, most are larger and a high proportion are between 1,500 and 2,000 square feet, amongst the largest convenience shops in the central area.

Map 3.12 shows the distribution of baker's shops in Ayr, Dunfermline, Perth and Stirling. It can be seen from these maps that while they are fairly widely spread throughout the central area, they are generally concentrated in or close to the principal shopping streets, a relatively high proportion being found in the most accessible sections.

Table 3.2 shows that baker's shops have, in relation to other conveience outlets, by far the highest proportion of premises close to the Central Area Mean Point while they are the only convenience land use to have a higher proportion of its number closer to the Peak Land Value Intersection than to the Central Area Mean Point. The proportion within 200 yards of the peak Land Value Intersection, 60 per cent, ranks fourth out of all retail land uses.

The average distance of bakers from their mean point ranks seventeenth which, while second lowest of convenience land uses, is surprisingly high in view of the high degree of concentration around the Central Area Mean Point and reflects the peripheral location of a minority of this category.

The evidence of the relationship between land use and frontage values shows the same picture with bakers having the highest proportion of all convenience outlets within 25 per cent of the peak value and a relatively low but still significant proportion below 25 per cent of the peak value.

The above evidence indicates that a high proportion of baker's shops require a highly accessible location to operate efficiently. Many baker's shops are located in the core of the principal shopping streets while others are sited in the main secondary shopping streets leading from the principal streets. There are also, however, a significant proportion of baker's shops, usually smaller and less specialised, which locate in peripheral locations. It would seem probable that those in a peripheral location are more dependent on the local resident population while those in the core of the central area compete for the custom of those shopping or working in the central area.

Fish Merchant

There are few (2 to 4) fish merchants in the central areas being studied except in the case of Perth which has 8 and Ayr which has 9. Fish merchant's premises are, on the whole, small and show only small variations in size, most being in the range from 400 to 700 square feet.

The distribution of fish merchants in Falkirk, Hamilton

Kilmarnock and Kirkcaldy seen on map 3.10, does not show any particular pattern with the few fish merchants there are being scattered throughout the central area. The proportion of fish merchants within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection are both less than the proportions for most of the other convenience catagories. The rank position of the average distance from the "mean point of fish merchants" is however low but this is a reflection of the lack of fish merchants in extreme locations rather than any marked degree of concentration among outlets of this type.

The distribution of outlets by frontage values shows a fairly even spread of fish merchants in each class but with a peak within 25 to 49 per cent of the peak value. Because of the low number of outlets the "mean point of fish merchants" is at times some considerable distance from the central area mean peak.

There are no obvious patterns in the distribution of fish merchants but it is clear that only a relatively low proportion can locate in the most accessible sites while a similar low proportion are to be found in the least accessible sites. The low number of fish merchants and their locations suggests that they are heavily dependent on custom from people visiting the central area to shop or work and therefore they require a reasonably accessible location. Their actual position is a result of their ability to compete for the most accessible sites.

Shoe Shop

In the towns being studied almost all shoe shops sell at least two of the three main types of shoes, mens, womens and childrens, while most sell all three. Table 3.1 shows that Dunfermline (7) and Stirling (8)

have fewer shoe shops than the other towns which have between 10 and 16 outlets. Most shoe shops fall within a fairly narrow size range on either side of 2,000 square feet.

Map 3.13 shows that in all the towns, shoe shops are very strongly concentrated in the core of the central area and this is reflected in all the measures of dispersal.

Three quarters of shoe shops are within 200 yards of the Central Area Mean Point while over a third are within 100 yards of this point, while 3 out of every 5 are within 200 yards of the Peak Land Value Intersections. Shoe shops also rank third in the average distance from their mean point. This high degree of concentration in the principal shopping streets is again seen in Table 3.5 which shows that 56 per cent of shoe shops are in premises rated at between 75 and 100 per cent of the peak rate while only 4 per cent fall below the 25 per cent level.

Shoe shops obviously require sites in highly accessible locations to carry out their trade effectively. The distribution of shoe shops throughout the highest land value areas together with the close proximity of the "mean points of shoe shops" and the Central Area Mean Points and the "mean points of durables" suggests that high accessibility rather than functional association is the key to locational choice in this land use. This is not to deny that comparison shopping in the buying of shoes is important in these towns but rather that in small central areas such as we have in the eight towns being studied, the concentration on sites in accessible locations means that all the sites are within close proximity of one another and there, does not, therefore, appear to be the need for further concentration to facilitate comparison shopping.

Men's Tailor

In all the towns there are between 8 and 10 men's tailors except in Stirling (14) and Ayr (19) where there are an appreciably higher number. Men's tailors range in size from 500 square feet to appreciably over 3,000 square feet but the majority are to be found in the 1,500 to 2,500 square feet range.

Map 3.14 clearly shows that, like shoe shops, men's tailors are highly concentrated in the main shopping streets and indeed a very low proportion of outlets are to be found off the principal shopping street in each town. The high degree of concentration is once again shown in the various measures of distribution expressed in Table 3.2, 3.3, 3.4 and 3.5. The main points of interest are the second rank position in terms of average distance from their mean point and that in the case of men's tailors, while 36 per cent of the subjects fall within 100 yards and 75 per cent within 200 yards of the Central Area Mean Point, the figures for the same distances from the Peak Land Value Intersection are 51 per cent and 77 per cent respectively. Not only are these latter proportions appreciably higher than for any other land use,but this is one of the few cases where the proportion of outlets within 200 yards of the Peak Land Value Intersection is higher than the proportion within the same distance of the Central Area Mean Point. The analysis shows a very strong locational association between men's tailors and the Peak Land Value Intersection.

Further evidence of the very high degree of concentration in the more desirable locations is found in the analysis of the relationship between land use and land values which shows that 62 per cent of men's tailors are in premises with values within 75 per cent of the peak

value, a percentage second only to that for variety stores, while only 14 per cent are rated below 25 per cent of the peak.

The evidence of land use distribution and also the relationship with land values shows that mens tailors, more than any other retail outlet, require highly accessible sites within medium sized towns. The very strong link to the Peak Land Value Intersection suggests that this is the land use which most of all is in keenest competition for custom and where accessibility is at the greatest premium.

Women's Tailor

This category of land use includes such specialised women's clothing shops as furriers and milliners. The number of such outlets varies widely with Hamilton (4) and Kilmarnock (5) having fewer and Perth (22) appreciably more than the remaining centres. There is a wide range of size of store, but on the whole, they are fairly large, a high proportion having between 1,500 and 3,000 square feet of floor space.

The distribution of women's tailors in Ayr, Dunfermline, Perth and Stirling is shown in Map 3.15, and it can be seen that this form of retail outlet is heavily concentrated on the principal and more important secondary shopping streets.

The proportion of women's tailors within 100 and 200 yards of the Central Area Mean Point and the Peak Land Value Intersection is fifth highest of all retail outlets (Table 3.2) while they rank eighth of all retail land uses in relation to the average distance from their mean point, which is itself close to the Central Area Mean Point in most cases.

The proportion of women's tailors in premises rated within 25 per cent of the peak rate (46 per cent) is also fifth highest of all retail outlets, while only 7 per cent of the category are in premises rated below 25 per cent of the peak value.

The evidence of both land use distribution and frontage values demonstrates that a high proportion of women's tailors seek, and can support, a highly accessible site within the central area. Other than the concentration within the more accessible locations there is no clear evidence of the grouping together of subjects in this category although, in a number of the towns shown in Map 3.15, there does seem to be some movement towards the grouping of outlets in some of the main secondary streets.

Other Clothing and Draper

The number of shops in this category varies very widely from 16 in Stirling and 23 in Dunfermline to 55 in Falkirk and 64 in Ayr. As might be expected in such a heterogeneous category the size of premises varies very widely.

Map 3.16 shows their distribution in Falkirk and Hamilton where it can be seen that they are to be found in all shopping streets, including the most accessible sections of the principal shopping streets.

The presence of a large number of outlets in the principal and main secondary shopping streets is reflected in the high proportions within 100 yards and 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection. The wide spread throughout all the shopping streets has, however, given this

category a high rank position in average distance from its mean point, which is itself located very close to the Central Area Mean Point in all towns.

The frontage values information provides further statistical description of the distribution described above in that this land use is well represented in all the frontage value classes, although it should be noted that two thirds are in premises rated below 50 per cent of the peak value.

There is a wide range of type of shop in this category, amost all of which seek an accessible location but only some of which, e.g. some of the large drapers and general clothiers can support a site in the most accessible locations. The remainder are to be found in the secondary shopping streets, and these are usually smaller shops selling children's clothing and fabrics.

Furniture Store

Furniture stores, which for the purposes of this study include shops selling carpets, are one of the largest users of space in all the central areas being studied. There are between 14 and 17 outlets in most of the central areas with Perth (21), Ayr (24), and Kilmarnock (24) having more than this number. The size of furniture stores varies widely from small carpet stores, no larger than 500 square feet, to large furniture stores up to 20,000 square feet, the average size being in the order of 6,000 square feet.

The distribution of furniture stores in Ayr, Dunfermline, Perth and Stirling is shown in map 3.17. Outlets of this type are to be found in all parts of the central area but the proportion in the most accessible locations is generally low. The majority of the furniture stores are to be found in the less expensive sites on

the principal shopping streets and on the secondary streets leading from the principal shopping streets. In general the larger stores in the more expensive locations occupy both ground and upper floors while those in more peripheral sites tend to have developed horizontally rather than vertically.

The measures of dispersal support the visual picture of a wide and fairly even spread of furniture stores. The average distance from the "mean point of furniture stores" is one of the highest of all retail premises while only 16 per cent of furniture stores are found within 100 yards of the Central Area Mean Point and 47 per cent within 200 yards. In each case the "mean point of furniture stores" is close to the Central Area Mean Point and there are no major concentrations of these stores within the central area.

Once again the evidence of frontage values endorses that of the measures of dispersal, Table 3.5 showing the wide spread of these stores throughout all the classes and in particular that two-thirds are located in premises rated below 50 per cent of the peak value.

The above analysis demonstrates that furniture stores tend to avoid the more expensive sites either by developing in less central locations or by vertical expansion into less expensive property. The large size of most furniture stores is probably one of the main reasons why few command a location with a high degree of accessibility.

Hardware Store

The number of hardware stores ranges between 5and 7 in all the towns except Kirkcaldy (9) and Perth (10). This type of store is generally among the larger stores

in the central area, the majority falling within the 3,000 to 6,000 square feet range.

Map 3.17 shows their distribution in Ayr, Dunfermline, Perth and Stirling and that this type of shop is not normally located in the core of the central area, most often being found in peripheral locations. In Table 3.2 it can be seen that the proportion of hardware stores within 100 and 200 yards of the Central Area Mean Point and the Peak Land Value Intersection, 13 per cent and 37 per cent and 13 per cent and 36 per cent respectively, are among the lowest of all retail outlets while their rank position in terms of average distance from their mean point is one of the highest among the durables group.

The information on the relationship between land use and frontage values shows a similar pattern with a low proportion of outlets in the top class, 75-100 per cent of the peak rate (17 per cent), and a relatively high proportion in the lower three classes.

The location of hardware stores in the periphery of the central area is a reflection of their large space requirements and their inability to pay the levels of rent required for a more central site. In all cases except Ayr, the Central Area Mean Point and the "mean point of hardware stores" are fairly close and there is no evidence of concentration within the category.

Variety Store

In each of the towns except Kirkcaldy (4) there are either 1 or 2 variety stores. In the towns being studied variety stores are mostly between 20,000 and 30,000 square feet and are second only to department stores in terms of absolute size. Map 3.17 shows the location of variety stores in each of the eight towns

and it can be immediately seen that all variety stores are located in highly accessible sites on the principal shopping streets.

Table 3.2 shows that 63 per cent of variety stores are within 100 yards of the Central Area Mean Point while 88 per cent are within 200 yards. The respective figures for the zones from the Peak Land Value Intersection are 45 per cent and 75 per cent. Variety stores rank first out of all retail uses in terms of the average distance from their mean point. These figures are the highest of all the retail outlets considered and indicate the high degree of concentration shown by this type of outlet. The location of the mean point of variety store is more closely tied to the Central Area Mean Point than to the Peak Land Value Intersection.

Table 3.5 confirms the above conclusions in that all variety stores are located in premises rated within 25 per cent of the peak value and indeed most of the variety stores are among those properties rated at this peak level.

The above evidence shows that variety stores clearly seek locations in the heart of the central area in highly accessible sites.

Department Store

There are between 1 and 3 department stores in the central areas being studied and they range in size from 20,000 to 40,000 square feet.

In understanding the distribution of department stores it is necessary to appreciate that one half of them are Co-operative department stores which because of their past "captive custom" have not been so strongly influenced by the forces which have encouraged other land uses to

seek a highly accessible location. In most medium sized towns the Co-operative department store is located in an inexpensive and less accessible site. Map 3.17 shows the distribution of department stores in all eight towns and it can be seen that they are mainly concentrated on the principal shopping streets although a few are located on main secondary shopping streets.

One-third of all department stores are located within 100 yards of the Central Area Mean Point while almost two-thirds are located within 200 yards of this point. Only 43 per cent, a relatively low proportion, are located within 200 yards of the Peak Land Value Intersection. Department stores rank eighth on average distance from their own mean point.

The distribution of department stores by frontage values also shows that although department stores are to be found in cheaper sites, they tend to be more concentrated in the more expensive sites than most other land uses (Table 3.5).

Department stores, other than Co-operative department stores, seek accessible sites within the central area but it would appear that they generate their own custom and that an extremely accessible location is not absolutely necessary. Co-operative department stores are having to become increasingly more competitive but inertia keeps them in their generally off-centre, cheaper locations.

Electrical Goods

The number of shops selling electrical goods is between 15 and 17 in all the towns except Dunfermline (10) and Stirling (12) which have fewer and Perth (23) which has a greater number. There is a wide range of size

of shop in all the central areas but most have between 1,000 and 3,000 square feet of floor space.

The distribution of electrical goods shops in Kirkcaldy and Kilmarnock is shown on Map 3.16 and the patterns shown here are typical of the situation in all eight towns. The map shows that electrical goods shops are distributed in almost all the main shopping streets but that the proportion in the most accessible locations is relatively low.

While the location of the "mean point of electrical goods shops" is generally very close to the Central Area Mean Point , Table 3.2 shows that a very low proportion of outlets (9 per cent) is within 100 yards of the Central Area Mean Point while the proportion within 200 yards is still fairly low at 44 per cent.

The rank position on distance from the "mean point of electrical goods shops" is very high, reflecting this wide distribution.

The frontage value data confirms the picture of a widely dispersed land use. The proportion within 25 per cent of the peak value is fairly low (19 per cent) while one out of every five outlets is to be found in premises rated both below 25 per cent and between 25 and 49 per cent of the peak value.

Electrical goods outlets do not appear to be in a strong position to compete for the most accessible sites in the central area. They do, however, appear to require a fairly accessible site and most are located in peripheral sites on the principal shopping streets and in the more important secondary streets.

Paper and Paint Shop

The number of paper and paint shops in the central area is between 9 and 12, except in the case of Perth where there are only 6. Most of the shops are modest in size having between 500 and 1,500 square feet of floor-space.

Map 3.18 shows their distribution in Falkirk, Hamilton, Kilmarnock and Kirkcaldy and it can be clearly seen that only a very few locate in the most accessible locations while a high proportion are to be found in peripheral sites.

Table 3.2 shows that the proportion of paper and paint shops within 200 yards of the Peak Land Value Intersection (34 per cent) is one of the lowest of all retail outlets while the proportion within 200 yards of the Central Area Mean Point although higher (45 per cent), is still relatively low.

Further evidence of the wide dispersal of paper and paint shops can be seen from their high rank position in terms of the average distance from their mean point.

The frontage values evidence demonstrates the same picture with a low proportion of shops in premises rated within 25 per cent of the peak value and a very high proportion rated at less than 25 per cent of the peak value.

All the evidence points to the fact that paper and paint shops, while seeking an accessible location, are not often able to compete successfully for highly accessible sites and have to settle for more peripheral sites on the principal shopping streets, and sites in the secondary shopping streets. There is no evidence

of any concentration within this category of land use.

Office Equipment

There are very few shops selling office equipment in the central areas being studied and there are none at all in Kirkcaldy or Perth. Dunfermline with 4, is the only town to have more than 2 outlets.

Map 3.19 shows their distribution in Ayr, Dunfermline and Stirling and it can immediately be seen that they are generally located in peripheral sites. This visual impression is backed up by the measures of dispersal which show that only 30 per cent of shops selling office equipment are located within 200 yards of either the Central Area Mean Point or the Peak Land Value Intersection, one of the lowest figures of all retail outlets.

The relationship between land use and frontage values provides further evidence of the peripheral location of these outlets with 72 per cent locating in premises rated below 25 per cent of the peak value. This figure represents the highest proportion of all retail land uses and is almost 50 per cent more than any other retail land use.

All the evidence highlights the peripheral location of office equipment shops. There is no clear relationship, however, between the location of these shops and the peripheral office concentration described below and it would therefore appear that their location is influenced more by the fact that they do not require an accessible location to operate rather than by a conscious effort to locate close to the main office concentrations.

Leather Goods

There are only a few shops specialising in the sale of

leather goods in the central areas of the eight towns, Dunfermline with 6 outlets being an exception to this general rule. Few of the shops have more than 1,300 square feet of floor space while some have as little as 300 square feet.

Map 3.20 shows their distribution in Falkirk, Hamilton, Kilmarnock and Kirkcaldy and it is immediately apparent that this type of shop is generally located in or close to the principal shopping streets and often in the most accessible sections of the principal shopping streets. The proportions within 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection rank 6th out of all retail land uses while they rank 10th among all retail uses in terms of the average distance from their own mean point.

The comparison of frontage values and land use shows that this activity is dispersed throughout the frontage value classes but that there is a higher than average concentration in premises rated within 25 per cent of the peak value.

Although there are only a few shops of this type in each town, they appear to require a fairly high degree of accessibility to operate efficiently and, in almost all cases, seek a location on the principal shopping streets or a main secondary shopping street.

Tobacconist

Shops specialising in the sale of cigarettes and tobacco usually have less than 500 square feet of floor space, among the smallest in the central area. There are between 2 and 4 tobacconists in all the central areas except Falkirk (1) and Ayr (6).

The distribution of tobacconists in Ayr, Dunfermline,

Perth and Stirling is shown on map 3.21 where it can be seen that they are all located on the principal shopping streets, including sites in the most accessible sections, and on the main secondary shopping streets.

The measures of dispersal demonstrate the above distribution in statistical terms, tobacconists having a relatively high proportion of their number within 200 yards of both the Central Area Mean Point (48 per cent) and the Peak Land Value Intersection (52 per cent) and ranking 6th in terms of the average distance from their mean point. As their mean point and the Central Area Mean Point are in close proximity to one another this reflects a relatively high degree of concentration in the core of the central area.

The frontage values information shows the same pattern with a relatively high proportion of this land use in premises rated within 25 per cent of the peak value (33 per cent), a very high proportion between 25 per cent and 50 per cent (46 per cent) and one of the lowest proportions of all retail uses below 25 per cent (12 per cent).

Tobacconists can be seen to require an accessible location within the central area and to concentrate on busy shopping streets.

Antique Shop

Antique shops, which generally have between 500 and 1,500 square feet of floor space, are poorly represented in all the central areas except Perth which has 8 and to a lesser extent Dunfermline and Stirling which have 4 outlets each.

The distribution of antique shops in Ayr, Dunfermline, Perth and Stirling is shown in Map 3.21. Two interesting

features can be clearly seen from these distributions, firstly the peripheral location of antique shops and secondly the strong local concentration of these shops within the central areas of Dunfermline, Perth and Stirling.

A statistical demonstration of the peripheral location of antique shops can be seen in Table 3.2 which shows that they have the lowest proportion of their number within 100 yards of both the Central Area Mean Point (4 per cent) and the Peak Land Value Intersection (4 per cent) while the proportion within 200 yards of the Peak Land Value Intersection (29 per cent) is second lowest to newsagents. Table 3.4, showing the rank position on average distance from their mean point, is extremely interesting as it shows not only that this category ranks relatively low (13) but that in those towns where there are a number of outlets, there is a marked concentration. The reasons for this concentration include the requirement for an inexpensive site and the limited availability of such sites, functional association with features of historical interest such as the Castle Hill in Stirling and the Abbey in Dunfermline, and the advantage of association within the category to enable comparison shopping.

The analysis of the distribution of land use by frontage values re-enforces the picture of the pattern described above with 86 per cent of outlets being in premises rated at less than 50 per cent of the peak level,54 per cent indeed being below 25 per cent. These figures are among the highest of all central area land uses.

Antique shops, while selecting a central location within the town as a whole, are not in a strong position to compete for an accessible location within the central

area and are forced to locate in peripheral sites. The evidence from the towns being studied indicates that in towns of this size, as the number of outlets increases, there is a strong likelihood of concentration in one part of the central area, often close to features of historic interest.

Jeweller

There are between 1 and 4 jewellers in all the central areas except in Perth where there are 8. A high proportion of shops are of the order of 1,000 square feet.

The distribution of jewellers in Falkirk, Hamilton, Kilmarnock and Kirkcaldy is shown in Map 3.22 where it can be seen that most are in the principal shopping streets or a main secondary shopping street.

The concentration on the main shopping streets is reflected in the measures of dispersal which show very high proportions within 100 yards of the Central Area Mean Point (23 percent) and the Peak Land Value Intersection (28 per cent) and high proportions within 200 yards of these points (53 per cent and 49 per cent respectively). The "mean point of jewellers" is fairly close to the Central Area Mean Point and the medium score on the average distance from their mean point reflects the concentration on the main shopping street rather than any degree of concentration within the category.

Jewellers are sixth out of all retail land uses in terms of the proportion of their premises rated within 25 per cent of the peak level, while only 8 per cent were located in premises rated below 25 per cent of the peak value.

The evidence of relationship between land use and frontage values demonstrates the requirement of jewellers for an accessible site within the central area, although the need to be in the core of the area is not nearly as strong as it is for such categories as men's and women's tailors, variety stores or shoe shops.

Music Shop

The number of shops dealing predominantly with the sale of music, records or musical instruments ranges from 0 in Kilmarnock up to 4 in some of the other towns. There is a wide range of size among music shops with some having as little as 500 square feet of floor space and others have over 3,000 square feet, depending on the exact nature of the business.

The distribution of these shops in Falkirk, Hamilton and Kirkcaldy is shown in Map 3.22. The most striking feature is the lack of any music shops in the principal retail streets and their location in the less desirable sections of the secondary shopping streets. In the three central areas in which music shops are mapped, it can be seen that they tend to be located in close proximity to one another and this feature is typical of most of the music shops in the central areas being studied.

The measures of dispersal show that music shops have a low proportion of their number within 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection. A more revealing fact, however, is that only 5 per cent are located within 100 yards of the Peak Land Value Intersection.

The rank position on the average distance from the

"mean point of music shops" is one of the lowest of all retail uses (4th) which demonstrates the tendency to group within the category. The "mean point of music shops" is itself, however, at some distance from the Central Area Mean Point, indicating their concentration in more peripheral sites.

As would be expected from the above analysis, the information on frontage values shows an exceptionally high proportion of this activity being located in premises rated below 25 per cent of the peak value while the proportion between 25 per cent and 49 per cent is also high.

Music shops, while seeking a location in the central area, are not in a strong position to compete for desirable sites and are forced into less desirable although not always peripheral locations. The evidence from the towns studied suggests that, in towns of this size, music shops tend to concentrate close to one another and it seems probable that this encourages comparison shopping to the benefit of both shopkeeper and customer.

Sports Goods

The number of shops selling predominantly sports goods ranges from 2 in Dunfermline, Hamilton and Stirling to 6 in Ayr and 8 in Falkirk and most of the shops have in the range of 500 to 1,500 square feet of floor space.

Map 3.19 shows their distribution in Ayr, Dunfermline, Perth and Stirling and it can be seen that only in the case of Perth are there sports goods' shops in the more desirable locations. In general they are

to be found on the fringes of the central area, although on the main secondary shopping streets.

The measures of dispersal demonstrate this distribution in a statstical manner with sports goods' shops having one of the lowest proportions of their number within 200 yards of the Central Area Mean Point and a relatively low proportion within 200 yards of the Peak Land Value Intersection, and also a high rank or average distance from their mean point. In most cases, especially where there are more than two outlets, the "mean point of sports goods' shops" is fairly close to the Central Area Mean Point which, when taken into account with the middle ranking position shown in Table 3.4, reflects both the lack of concentration within this category and its relatively peripheral location.

The information on the relationship between frontage values and land use provides further statistical evidence of the peripheral location of this land use as only 10 per cent are located in premises with frontage values within 25 per cent of the peak value, the second lowest proportion of all retail uses, while 41 per cent, an extremely high proportion, are located in premises rated below 25 per cent of the peak value.

All the evidence demonstrates the relatively weak position of sports goods' shops in the search for an accessible location, but the location on the main secondary shopping streets suggests that they require an accessible site and their presence in peripheral locations is of necessity rather than choice.

Camera Shop

There are very few shops which specialise in the sale of cameras and film in the eight town centres and in fact none at all in Falkirk. The range of size of shop is wide, relative to the number involved with the sizes ranging from under 1,000 to over 3,000 square feet.

Map 3.19 shows their distribution in Ayr, Dunfermline, Perth and Stirling and it can be seen that almost all are located in the peripheral parts of the principal shopping streets and in the main secondary shopping streets.

This distribution has resulted in an extremely low proportion of these shops being located within 150 yards of the Central Area Mean Point and almost one-half between 150 and 200 yards. A lower proportion are to be found within 200 yards of the Peak Land Value Intersection although most of these are in fact within 100 yards of this point. In view of the very small absolute numbers and the actual sites involved it is not considered that much stress should be put on this point and similarly the location of the "mean point of camera shops" is not a particularly relevant measure in this land use category.

The evidence of frontage values shows that a very low proportion of camera shops are to be found in sites rated over 50 per cent of the peak value while half are in sites rated at 25-50 per cent of this level.

The location of camera shops in the peripheral

sections of the principal shopping streets and in the main secondary shopping streets suggests that they require fairly accessible sites within the central area but for economic reasons can only support a less expensive and therefore a less accessible site.

Cycle Shop

The number of cycle shops ranges between 2 in the majority of centres to 4 in Perth and 5 in Ayr while the shops themselves tend to be fairly substantial and in the order of 1,000 to 2,500 square feet.

Their distribution in Falkirk, Hamilton, Kilmarnock and Kirkcaldy is shown in Map 3.20 where it can be seen that they are to be found in the full range of locations, although only a modest number are to be found in the core of the principal shopping streets. The close association of the 2 cycle shops present in Kirkcaldy, where they are in the core of the principal shopping street and in Falkirk where they are on the fringe of the central area is also found in Dunfermline and to a less marked extent in some of the other towns.

Table 3.2 shows that while the proportions within 200 yards of the Peak Land Value Intersection and the Central Area Mean Point are fairly typical of all durable shops, the proportion within 0 to 150 yards of the peak land value intersection (13 per cent) is second lowest of all land uses. The rank position on average distance from the "mean point of cycle shops" is very low (5th) reflecting the tendency towards

the association of land use within this category.

The spread of cycle shops throughout the central area and the tendency towards a marked peripheral location is also demonstrated in the frontage values information in which 21 per cent of cycle shops are seen to be located in premises rated within 25 per cent of the peak value but 70 per cent are to be found in premises below 50 per cent of this level.

Cycle shops are therefore one of a group of land uses which require an accessible location within the central area but which, for financial reasons, are normally forced to locate in less accessible secondary shopping streets. There is a greater degree of association within this category than in most of the other retail land uses.

Book Shop

There are between 1 and 4 book shops in the central areas being studied with once again Ayr (3) and Perth (4) having the largest number of outlets. Book shops are, on the whole, relatively large with most falling within the range of 1,500 to 3,000 square feet of floor space.

Map 3.20 shows their distribution in Falkirk, Hamilton, Kilmarnock and Kirkcaldy and it is clear that book shops are to be found in a range of locations from fairly central sites to peripheral ones, although seldom extremely peripheral ones.

This distribution is reflected in the measures of dispersal which show that the proportions of their number within 200 yards of the Peak Land Value Intersection and the Central Area Mean Point are fairly

typical of, if slightly lower than, most durable retail outlets. Book shops rank low on average distance from their mean point which is itself reasonably close to the Central Area Mean Point in towns such as Kilmarnock, and Kirkcaldy, where there are more than 2 book shops. The study of actual location shows that this feature is brought about by the lack of book shops in extreme locations and the location of many in secondary shopping streets close to the principal shopping streets rather than any marked degree of concentration around their mean point.

The evidence of frontage values shows a spread of book shops in all classes but a marked concentration in premises rated below 25 per cent of the peak value.

Book shops are generally located in the main secondary shopping streets and are seldom found in the most accessible locations. This distribution is the result of a relatively poor competitive position rather than any particular benefits to be gained from such a location pattern.

Chemist

The number of chemist's shops ranges between 4 in Falkirk and 11 in Ayr with the majority of shops having between 1,000 and 2,000 square feet of floorspace.

The distribution of chemists in Falkirk, Hamilton, Kilmarnock and Kirkcaldy is shown in map 3.23 where it can be seen that a high proportion are to be found in the more accessible sections of the principal shopping streets and many of the others are in relatively good sites in other parts of the principal shopping streets and in the secondary shopping streets.

In Table 3.2 it can be seen that chemists are more heavily concentrated around both the Central Area Mean Point and the Peak Land Value Intersection than all convenience uses and most durable retail land uses. The rank position on the average distance from their mean point is, however, higher than would be expected, and this reflects the extremely peripheral location of a small proportion of chemists, particularly noticeable in Ayr.

The distribution of chemists by frontage value classes clearly shows the concentration in the core of the central area. 28 per cent of chemists are located in premises rated at 75 per cent or more of the peak value while 64 per cent are rated at more than 50 per cent of the peak value.

The evidence on frontage values and land use distribution clearly shows that most chemists seek locations with high accessibility and this is particularly true with the larger chemists, particularly the outlets of the two main chain chemists, Boots and Timothy White (now merged). A relatively small proportion of chemists are in locations on the periphery of the central area where they probably provide a service for local residents as well as for people moving into and out of the central area to shop or work.

Office Use

In considering the location of offices within the central areas of medium size towns it is useful to consider their distribution in relation to the three main locations in which they are found in these towns; firstly in the more important shopping streets, usually on upper floors, secondly in late 19th century and early 20th century purpose built property close to the main shopping streets, e.g. in the East Port in

Dunfermline, John Finnie Street in Kilmarnock and Newmarket Street in Falkirk, and thirdly in peripheral areas of large houses which have been converted to office use.

Medical Service

Five types of medical service have been included in this category, veterinary surgeons, chiropodists, opticians, doctors and dentists and each has its own locational characteristics. It is convenient, however, to look at the group as a whole first and then comment briefly on the location of the individual uses.

Taking all five types of service together, Table 3.1 shows that in all the towns except Ayr (20) and Dunfermline (22) there are between 12 and 15 "surgeries" in the central area. In most towns dentists are the largest single medical land use while there is one veterinary surgeon in five of the towns and none at all in the other three.

The proportion of medical facilities within 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection are among the lowest of all central area land uses. The situation varies however between the different towns in that where there is a distinct peripheral office district, e.g. in Ayr, Perth and Stirling, the proportions are much lower than in towns such as Dunfermline and Falkirk where there are no such large areas of office use. The absolute average distance from their mean point is very high in most towns, while they rank second highest of office uses in terms of this measure when all eight towns are considered together.

Map 3.24 displays their distribution in Ayr, Dunfermline, Perth and Stirling, showing their general concentration in these peripheral locations but also the difference

in location between dentists and opticians, which are generally found in the main shopping streets, although not often in the most accessible sectors of the principal shopping streets, and chiropodists, veterinary surgeons and doctors, which are very heavily concentrated in peripheral locations. It should be noted that while opticians are located in shop type premises on the ground floor in shopping streets, dentists are generally found in upper floor premises in retailing areas.

There are therefore two groups within this category of land use. Firstly, there are opticians which require shop type premises and a fairly accessible location in order to operate effectively and dentists which also tend to locate in more accessible locations although above ground floor level. The other three medical services form a second group of land use which requires a central site within the town but which locates peripherally within the central area. This location is both a response to economic pressures and the result of its preference for large, usually Victorian houses, where a surgery can be combined with living accommodation.

Finance and Insurance

This is one of the two largest office categories, most of the central areas having between 23 and 32 offices in this group, with Stirling (17) and Ayr (44) being the exceptions. The size of office varies very widely from several hundred square feet to tens of thousands of square feet, the largest being the Perth headquarters of the General, Accident, Fire and Life Insurance Company, but the majority are in the range 1,000 square feet to 2,500 square feet.

Finance and insurance offices found in the main streets are normally located above ground floor level but in office districts, where these have developed, they are found at both ground level and on upper floors. An exception to this general pattern is building societies, some of which are to be found in retail type locations.

Map 3.25 shows their location in Falkirk, Hamilton, Kilmarnock and Kirkcaldy and it is apparent that there is no one type of location where these offices are to be found. Some general patterns can, however, be identified. A low proportion of these offices are located in the most accessible sections of the principal shopping streets, while there are significant groupings, both in the areas of purpose built offices in the secondary shopping streets, for example around the junction of Cow Wynd and High Street in Kirkcaldy, in John Finnie Street in Kilmarnock and in Newmarket Street and Vicar Street in Falkirk, and in the areas of converted housing on the periphery, for example in Cadzow Street in Hamilton and the Wellington Square area in Ayr.

The measures of dispersal show that the proportion of this land use within the three zones from the Central Area Mean Point and the Peak Land Value Intersection are lower than most retail uses and about the average for office uses.

The mean point of this category is in all cases at some distance from the Central Area Mean Point and in the direction of the main concentration of office uses. Financial and insurance offices rank midway on average distance from their mean point, due in large part to the groupings of this land use in the

various office locations within the central area. The absolute values, Table 3.3, show this land use to be, in general, less dispersed than most convenience retail land uses and some of the more widely dispersed durable retail uses.

Finance and insurance offices are to be found in reasonable numbers in all three main areas in which offices tend to locate. Two main factors appear to influence the location of these offices; firstly the availability of suitable premises and secondly the function of the particular office. Within this rather heterogeneous category, building societies in particular show a marked tendency to locate in the main shopping streets, while regional headquarters, for instance of insurance companies, show a marked tendency to concentrate in the fringes of the central area.

Banks

There are between 8 and 10 banks in all the towns being studied except Ayr and Perth which have 17 and 18 respectively. Banks have relatively large premises, most having between 1,500 and 3,500 square feet of floor space.

The location of banks in Falkirk, Hamilton, Kilmarnock and Kirkcaldy is shown in Map.3.26. Two distinct locations for banks can be identified from these maps. The great majority of banks are to be found in the principal shopping streets and in the most important secondary shopping streets, generally being distributed throughout, rather than being strongly concentrated within them. A smaller but significant number are to be found in the main office areas, both in the purpose built office areas, e.g. John Finnie Street in Kilmarnock and the East Port in Dunfermline, and in

the more newly developed office areas, e.g. Cadzow Street in Hamilton and in Sandgate, close to Wellington Square, in Ayr.

The measures of dispersal reflect these patterns in that a high proportion of banks are located within 200 yards of both the Central Area Mean Point and Peak Land Value Intersection, while banks rank second among office uses in terms of the average distance from their mean point, The absolute values, Table 3.3, show that banks have lower values than most retail and almost all other land uses. Tables 3.3 and 3.4 also show that it is in Ayr and Perth, which both have large peripheral office developments, that banks have the highest values relative to other central area uses.

As banks are generally situated in retail streets and are rated as shops, it is possible to analyse them in relation to the frontage values applied for rating purposes. Table 3.5 shows that banks are to be found in all four main classes but that the proportion in premises rated below 25 per cent of the peak value, 14 per cent, is one of the lowest of the land uses found in retail type premises.

Banks can therefore be seen to require one of two locations, either an accessible site on an important shopping street or a location close to a major office district.

Legal Office

The number of legal offices in the eight central areas ranges from 4 in Stirling to 13 in Ayr and 14 in Perth. Most have over 1,000 square feet of floor space and a few have more than 3,000 square feet.

Their distribution in Falkirk, Hamilton, Kilmarnock

and Kirkcaldy is shown in Map 3.27 where it can be seen that the distribution is very similar to that of finance and insurance offices, there being legal offices in the upper floors of premises in the more important shopping streets, although not many in the most accessible sectors of the principal shopping streets, and in the purpose built office dwellings in and close to the main secondary shopping streets and in converted houses in the peripheral office areas.

The measures of dispersal demonstrate this pattern of distribution and indicate that the proportion of this activity in the core of the central area is higher than the respective figure for all other office uses except banks. The rank position on average distance from the "mean point of legal offices" is the lowest of all office uses reflecting the lower proportion of their number in peripheral locations. Table 3.4 shows that in Ayr and Perth, where peripheral office development is most marked, the rank on average distance from the "mean point of legal offices" is very low indeed relative to other office uses.

The results of this investigation demonstrate that legal offices are more dependent on an accessible location than other office uses, banks excepted, and that they locate in the upper floors of premises in the main shopping streets or in sites close to these streets.

Other Professional Offices

There are between 10 and 12 offices in this category in all the central areas being studied except Hamilton (6), which has appreciably less, and Perth (15) and Ayr(18), which have more.

Map 3.28 shows their distribution in Ayr and Stirling

where it can be seen that they are to be found in all three areas in which offices tend to concentrate, although the proportion in the main shopping streets is on the low side.

The measures of dispersal show that the proportions of these offices within 200 yards of the Central Area Mean Point and Peak Land Value Intersection are low relative to other central area uses while the average distance from their mean point is high relative to most office uses.

Other professional offices, as a category, are distributed in all the main locations in which offices are concentrated but in most towns the proportion in the more important shopping streets is relatively low, indicating that a highly accessible location is not important to the efficient operation of their business.

General Business Office

General business offices are the second of the two major office categories, the number in all the central areas except Ayr (50) and Perth (64) being in the range of 21 to 32 subjects. The size of offices varies widely from very small offices of a few hundred square feet, such as the offices of Coal-merchants, to very large offices of many thousands of square feet such as the Headquarters of regional Co-operative Societies.

Their distribution in Perth and Dunfermline can be seen in map 3.28. The distribution in these two towns, typical of the pattern in all eight towns, shows that unlike most of the office uses described above, general business offices are fairly widely dispersed with only a relatively small proportion locating in the more important shopping streets.

The measures of dispersal demonstrate this wide distribution in that the proportions of general business offices within 200 yards of both the Central Area Mean Point and Peak Land Value Intersection are among the lowest of office uses and indeed all central area land uses. Average distance from their own mean point is high in almost all of the central areas while they rank top among offices uses on the average over the eight central areas. Because of the wide distribution, the "mean point of general business offices" tends to be closer to the Central Area Mean Point than the mean point of most office categories but it is still usually off-set a little towards the main office concentration.

General business offices are a heterogeneous group and do not all operate under the same locational forces. The group as a whole does however show some general characteristics, particularly marked being the relative paucity of such uses in the more important shopping streets, both at ground and upper floor levels. It appears that once again there is a land use which, in urban terms, is located in the most accessible location but which, within the central area itself, does not require to be highly accessible.

National Government Office

There are between 5 and 7 national government offices in all the central areas being studied except Hamilton and Kilmarnock which have only 2 each.

Their distribution in Ayr, Dunfermline, Perth and Stirling is shown in map 3.29 and it can be seen that while one or two locate in the most accessible sections of the principal shopping streets, most are in peripheral sections of the principal shopping streets, in secondary shopping streets and in the main peripheral office areas. In looking at the type of office in

these different locations, it is clear that it is the offices which require frequent "customer contact", for example those of the Department of Employment and the Department of Social Security which are located in the more accessible locations while other offices, such as the Department of Agriculture and Fisheries and the District Valuer, are in less accessible sites.

The measures of dispersal show that a relatively low proportion of these offices are located in the core of the central area, the proportion within 200 yards of the Central Area Mean Point being on the low side while the proportion within 200 yards of the Peak Land Value Intersection is one of the lowest of all central area land uses. In terms of average distance from their mean point, national government offices have a high absolute value in most centres and rank 6th equal of the nine office uses in terms of the average of the eight towns.

National government offices are of two types, those which require relatively frequent "customer contact" and which locate generally in secondary shopping streets, and those which do not require this contact and tend to locate in the peripheral office areas.

Local Government Office

The number of local government offices in each centre depends to some extent on whether or not the town has a role as a county town, and on the age of the burgh and, where present, the county buildings. Local government has been a major growth sector during the 20th century and in towns where major new offices have not been constructed in recent years, for example in Perth and Ayr, there tends to have been a proliferation of

smaller offices, while in towns like Kirkcaldy, the burgh functions are concentrated in one major recently built office. In the case of Hamilton, it should be noted that the new County Buildings, the largest in Scotland, have concentrated county functions outside the central area.

In local government office use more than any other, the number of offices is a poor reflection of the role of this activity within the central area.

The location of local government offices in Ayr, Dunfermline, Perth and Stirling is shown in map 3.29 where it can be seen that, as with national government offices, few are located in a principal shopping street while a large number are to be found in the fringes of the central area. Burgh offices are much more centrally located than the county offices which in most cases are in the major peripheral office areas. While part of the reason for this is the greater "customer contact" at burgh office level, it is also a factor of historical development in that the later development of county offices and their large space demands have encouraged their location in cheaper, peripheral sites.

The measures of dispersal demonstrate this position statistically in that they show that local government, like national government, offices have a similar proportion of their number within 200 yards of the Central Area Mean Point and a higher proportion within 200 yards of the Peak Land Value Intersection and also that they have a slightly higher rank on average distance from their mean point, although in no case could it be said that there is any single concentration of local government offices within the town.

Within the medium size towns studied, those local authority functions which require fairly frequent contact with the public tend to be located in the main secondary shopping streets while those which require less contact with the public, particularly administrative county functions, tend to locate at some distance from the main shopping streets, for example in Ayr, Stirling and, of course, Hamilton.

Betting Office

The number of betting offices ranges from 3 in Kirkcaldy and Falkirk to 8 in Perth and 12 in Ayr. On the whole betting offices are small, usually having less than 1,000 square feet and often under 500 square feet of floor space.

Their distribution in Falkirk, Hamilton, Kilmarnock and Kirkcaldy is shown on map 3.30. It is immediately apparent that they are concentrated in the less accessible sections of the principal shopping streets, in secondary shopping streets and, as is frequently the case, in side streets close to the above.

The measures of dispersal show that low proportions of their number are located within 200 yards of the Central Area Mean Point and Peak Land Value Intersection while the average distance from their mean point, while lower than most office uses, is still fairly high in relation to other central area uses.

Betting offices clearly require a fairly accessible location within the central area but cannot afford to locate in the more accessible sites, being forced into secondary shopping streets and less desirable sites close to the principal shopping streets.

Service Activities

Skilled Trades

The number in this category in the eight towns ranges from 5 in Dunfermline to 22 in Ayr, with the other 6 towns having between 10 and 16. The size of premises varies very widely depending on the nature of the activity.

The generally peripheral location of this activity can be seen in Map 3.31, which shows their distribution in Ayr, Dunfermline, Perth and Stirling. In the cases where premises are located close to the principal shopping streets, e.g. in Ayr, Perth and Stirling, the actual site is almost always behind the main retail frontage or in unattractive locations, e.g. beside Pullars of Perth factory in the case of Perth.

The measures of dispersal demonstrate this situation effectively, as in Table 3.2 this activity can be seen to have very low proportions of its number within 100 yards and 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection. The "mean point of skilled trades" is normally fairly close to the Central Area Mean Point, while the average distance from their own mean point is high, although not extreme in any of the towns.

The relationship between frontage values and land use shows that 88 per cent of premises in this category are rated below 25 per cent of the peak value while only 7 per cent are rated above 50 per cent of this figure. Analysis of the activities rated above 50 per cent of the peak value shows that some are in their present location due to historical factors, e.g. a glaziers in Kirkcaldy High Street,

while others are joiners specialising in the sale of wood and do-it-yourself goods, e.g. the joiners/do-it-yourself outlet in Dunfermline High Street.

The survey of managers of skilled trades in the central area (section 1) demonstrated the need for this activity to be located in the central area of medium size towns. Their location in the peripheral and less desirable locations demonstrates that they cannot support and do not require a highly accessible site to operate efficiently.

Photographers

There are only a few photographers in most of the central areas being considered and none at all in Kilmarnock.

Their location in Ayr, Dunfermline, Perth and Stirling is shown in Map 3.32 and its generally peripheral nature is immediately apparent. There are no photographers premises in any of the more accessible sections of the principal shopping streets and most are located in less attractive shopping streets and in some cases in side streets off these.

Because there are so few photographers premises the location of, and average distance from, their mean point varies widely and are not particularly useful measures. The evidence of frontage values is, however, more useful as it shows that there are no photographers premises rated within 25 per cent of the peak value, while 88 per cent are below 50 per cent of this value.

Photographers, while selecting a location in the central area, do not have to be in a highly accessible site to operate effectively, indeed the above evidence indicates that they do not require to be located in the

more accessible main shopping areas.

Hairdresser

The number of hairdressers in the central areas ranges from 10 in Falkirk to 22 in Ayr and 23 in Perth.

While most of the hairdresser shops are between 400 and 800 square feet, a few, usually where there are male and female salons in the one establishment, have appreciably more than 1,000 square feet.

In considering the distribution of hairdressers, it should be recognised that while most are located in ground floor premises, a few, particularly in the more accessible locations, are to be found in first floor premises. This is particularly important in analysing the distribution of land use in relation to frontage values.

Their distribution in Falkirk, Hamilton, Kilmarnock and Kirkcaldy is shown on Map 3.30 where it can be seen that they are widely dispersed throughout the central area, locating in all shopping streets, although not in any numbers in the most desirable sections of the principal shopping streets.

The proportion of hairdressers within 100 and 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection are all low, while the average distance from their mean point is high in relation to most retail uses.

The distribution of hairdressers by frontage value classes shows a similar pattern with a very high proportion (60 per cent) being in the lowest class and a very low proportion (4 per cent) being in the top two classes.

Hairdressers are widely dispersed, being normally located in the peripheral sections of the principal shopping streets and in most of the other main shopping streets. While they do not require a highly accessible location to operate effectively their location suggests that they do require to be in a reasonably accessible location.

Cleaners

There are between 4 and 10 dry-cleaner and laundry outlets in the central areas of the medium size towns being studied. Kilmarnock (9), Ayr (10) and Perth (10) have the largest number of outlets while Hamilton (4) and Stirling (4) have the least. The large majority are below 1,000 square feet and most have about 500 square feet of floor space.

Their distribution in Ayr, Dunfermline, Perth and Stirling is shown in Map 3.32, where it can be seen that they are to be found in most principal and secondary shopping streets but are not well represented in the most accessible sections of the former.

The statistical measures of dispersal show this pattern well with, relative to retail outlets, a fairly low proportion of their number within 100 yards of the Central Area Mean Point and Peak Land Value Intersection but an average number within 200 yards of these points. The average distance from their mean point, which is itself relatively close to the Central Area Mean Point, is high in almost all of the towns, and once again there is a fairly widely dispersed pattern. The distribution of cleaners by frontage value classes again demonstrates this, with however a fairly low proportion (16 per cent) in premises rated within 25 per cent of the peak value.

Dry cleaners and laundries have locational characteristics similar to the large group of retail activities which require an accessible location but cannot, in general, support one in the most accessible sections of the principal shopping streets and are thus forced into locations in the periphery of the principal shopping streets and into main secondary shopping streets.

Shoe Repairer

The number of shoe repairers ranges from 2 in Kirkcaldy to 8 in Perth, while most central areas have between 5 and 7. As with dry-cleaners, the shops are small, the majority being under 1,000 square feet and most being of the order of 500 square feet.

Their distribution in Ayr, Dunfermline, Perth and Stirling is shown on Map 3.32 where they can be seen to be distributed in the principal shopping and main secondary shopping streets and also in a few cases in other streets. Whereas few dry-cleaners are found in the most accessible sections of the principal shopping streets, a higher, although still not large, proportion of shoe repairers are found in these locations. This is reflected in the higher proportion of shoe shops within 100 yards of both the Central Area Mean Point and Peak Land Value Intersection and the slightly higher proportions within 200 yards of these points.

In most of the towns, Ayr being the exception, the "mean point of cleaners" is relatively close to the Central Area Mean Point. The average distance from their mean point while generally lower than that of dry-cleaners, is still fairly high in most towns, showing the reasonably wide distribution of cleaners throughout the central area.

The information on frontage values shows that shoe repairers are fairly evenly distributed throughout all the frontage classes, the proportion in the top class (24 per cent) and the lowest class (30 per cent) both being fairly high.

Shoe repairers are to be found in a wide range of locations in the central area. There is no evidence of any association within the class and on the contrary, it seems possible that there is a positive disincentive for them to locate in close proximity to one another.

Other Central Area Uses

In this section attention is given to those other central area land uses which are either present in appreciable numbers or make substantial demands on central area land.

Religious Institutions

The number of religious institutions in the central area varies from 9 to 17. Map 3.35 shows their distribution in Falkirk, Hamilton, Kilmarnock and Kirkcaldy. While a few churches are in the vicinity of the principal shopping streets, most are to be found in peripheral locations and this is particularly the case with the places of worship of the more recently established minority groups.

The measures of dispersal reflect this situation with low proportions being within 200 yards of the Central Area Mean Point and Peak Land Value Intersection and high values on average distance from their mean points.

The location of many churches is a factor of the historical development of the town but, where they have been established in recent years, there has been a clear choice for sites in less accessible locations. While many of the minority groups seek a central site within the town they do not require and probably could not afford a highly accessible site. The location of the older established churches are related to historical rather than any other factors.

Garages

There are between 5 and 7 central area garages in all the towns being studied except Perth (13) and Ayr (21) which have appreciably more. The size of

premises included in this category ranges from under 1,000 square feet in central car showrooms to well over 20,000 square feet in some of the larger peripheral garages.

Map 3.32 shows their distribution in Falkirk, Hamilton, Kilmarnock and Kirkcaldy and the peripheral nature of this distribution is clearly seen, indeed there are very few garages which are not located on the fringe of the central area and those that have a more central location are usually only involved in the sale of cars.

The measures of dispersal demonstrate the position statistically showing that garages have the lowest proportions of all land uses within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection while the average distance from their mean point is high in almost all the towns, although not always the highest.

Central area garages seek a central location within the town as a whole but their large size and fairly recent development has encouraged their location in peripheral sites.

Wholesale Warehouse

There are no wholesale warehouses in Stirling's central area and between 3 and 9 in the other central areas. While some of the premises are under 1,000 square feet, most are appreciably more than this and some have over 10,000 square feet.

Map 3.33 shows their distribution in Falkirk, Hamilton, Kilmarnock and Kirkcaldy. It can be seen from this

map that wholesale warehouses are mostly sited in less accessible locations, on the periphery of the central area, behind retail street frontages, or in minor streets leading to the shopping streets. The proportions of this land use within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection are fairly low, particularly in the case of the latter measure, while the average distance from their mean point is generally one of the highest.

Many warehouses benefit greatly from a central location within the town but they neither require nor can afford a highly accessible site.

Entertainment

There are between 4 and 6 places of entertainment in each of the central areas being studied except Ayr (13), the only major holiday resort of the eight towns.

Map 3.33 shows their location in Falkirk, Hamilton, Kilmarnock and Kirkcaldy. While few are to be seen in the principal shopping streets, they are generally in reasonably accessible locations, either in more peripheral sections of the principal shopping streets, in the main secondary shopping streets or in side streets close to the above. In many cases the frontage of these establishments, particularly in the case of cinemas and dance halls, is quite short while the building itself expands substantially behind the main retail frontage.

In relation to other categories within the "other main central area land uses" group, the entertainment category has one of the highest proportions of its number within the 200 yards zone of both the Central Area Mean Point and the Peak Land Value Intersection but in terms of all central area uses, it is fairly widely distributed

and the map shows that there are no significant concentrations within this category, other than in Hamilton where the concentration is, in large part at least, due to the limited availability of suitable sites. Table 3.3 shows that while the average distance from their mean point varies widely between the eight central areas, it is generally high. The relationship between the Central Area Mean Point and the "mean point of entertainment" varies between the different towns as in some, for example Falkirk and Kirkcaldy, it is relatively close to the Central Area Mean Point while in others, for example Hamilton, it is at some considerable distance from the Central Area Mean Point. These differences are more a function of the small number of subjects in the category rather than any definite locational factors.

Places of entertainment require an accessible location but, because of their large space requirement and historical development, they tend to locate in or close to the less accessible sections of the principal shopping streets and in the secondary shopping streets.

Restaurant/Cafe

There is a large number of restaurants and cafes in all the towns being studied but Perth (24) and Ayr (35) have by far the largest number. The premises vary in size from around 500 square feet to several thousand square feet. While the majority occupy ground floor premises, many of the larger restaurants, particularly those in the principal and main secondary shopping streets, are located on the first floor.

Their distribution in Ayr, Dunfermline, Perth and Stirling is shown on map 3.34, where it can be seen that they are present in all shopping streets although

not in great numbers in the most accessible sectors of the principal shopping streets. In carrying out the land use survey it was clear that there was a strong relationship between the more accessible shopping streets and the larger and better quality restaurants and cafes.

This widespread distribution is reflected in the measures of dispersal which show fairly low proportions within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection and a relatively high average distance from their mean point. The even spread of restaurants and cafes throughout the main shopping streets has resulted in the "mean point of restaurants/cafes" being fairly close to the Central Area Mean Point in most towns.

As restaurants and cafes are treated as retail outlets for rating purposes it is possible to look at the relationship between land use and frontage values. The information on frontage values shows that restaurants and cafes are present in all the frontage value classes but that they are particularly strongly represented in the 0-24.9 per cent and 25-49.9 per cent classes. As some of the restaurants and cafes are above ground floor level this has the effect of writing down the proportion of cafes and restaurants which would appear in the top 2 classes and while the number of subjects involved is not great this point should be noted.

The location of cafes and restaurants is strongly tied to shopping streets where there is a heavy pedestrian flow and indeed almost all retail streets support at least one cafe or restaurant. In many cases, particularly in Dunfermline and Ayr, there are a number of cafes in close proximity to transportation termini but this is not always the case. The evidence of actual locations

suggests that the development of office districts has had very little influence on the distribution of this land use in medium sized towns.

Public House

The number of public houses ranges from 11 in Stirling to 26 in Hamilton and Ayr and most premises have some 1,000 to 2,500 square feet of floor space.

Their distribution in Ayr, Dunfermline, Perth and Stirling is shown in map 3.34 and, as in the case of restaurants and cafes, there is a strong relationship between public houses and shopping streets, public houses being widely dispersed throughout these streets.

The measures of dispersal reflect this situation with the proportions within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection being fairly low while the average distance from their mean point is high in most towns.

Public houses can, therefore, be seen to require fairly accessible locations within the central area and are strongly tied to the main retail streets. Few, however, can support a location in the most accessible sections of the principal shopping streets.

Hotel

Perth, with 14, has by far the largest number of central area hotels of all the towns studied, the others ranging between 2 and 8.

Map 3.33 shows the distribution of these hotels in Falkirk, Hamilton, Kilmarnock and Kirkcaldy and it can be seen that in general, there are few in the principal shopping streets, most being located in the secondary shopping

streets and towards the fringes of the central area, particularly in the vicinity of the railway station.

The measures of dispersal show that a fairly low proportion (42 per cent) are within 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection while the average distance from their mean point is lower than most of the "other central area land uses" group although not low in terms of all central area land uses.

There is no general pattern in the location of central area hotels, the only striking feature being the lack of such premises in the principal shopping streets. Hotels do not appear to require an accessible location within the central area and tend to locate in upper floors of buildings in the secondary shopping streets, close to transportation termini or in large houses in the periphery of the central area, which have been converted to hotels.

GEOGRAPHICAL DISTRIBUTION OF THE MAIN LAND USE GROUPS

Having identified the pattern of distribution of individual land uses, the distribution of the main land use groups is now considered in each of the eight towns. The analysis is based on the measures of dispersal used earlier in the section together with the information on floorspace extracted from the Assessor's records. Table 3.6 shows both the amount and proportion of floorspace in the main land use groups. Table 3.7 and 3.8 show the proportions of their number within the three zones of the Central Area Mean Point and the Peak Land Value Intersection.

DUNFERMLINE

Retail

Dunfermline has a relatively low number of convenience and durable retail outlets while floor space in both groups is similarly low. Shopping is very heavily concentrated in the main through route of the High Street and its eastern and western extensions, in Queen Street and in the streets between these two. The low number of outlets and the fairly compact shape of the shopping area has given Dunfermline relatively high values on the proportions of retail use within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection, while the absolute average distances from individual mean points are among the lowest of all eight towns.

Office Use

The number of offices is close to the mode for the eight towns but office floor space is low, the amount of non-Government office floor space being the lowest

of all the towns. The main concentration of offices is in purpose built premises in the East Port, which first developed as an office area at the turn of the century, while many of the remainder are to be found in the main shopping streets. Although there is a fairly large area of assimilation for office use to the south of the central area, this is neither large in terms of number of offices nor of floor space.

Other Uses

The numbers of services and other central area uses are similar to those in Falkirk, Hamilton, Kirkcaldy and Stirling while the floor space in these activities is of a similar level, except in the case of catering services where the town is poorly served. A fairly compact shape and the low total number of central area uses have combined to give high values on the proportions of services and other central area land uses within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection. The absolute values on average distance from the mean points of individual land uses are among the lowest in all the towns.

FALKIRK

Retail

There is a sharp contrast in the level of durable and convenience retail provision in Falkirk relative to the other centres. While the Burgh has the third highest number and second highest floor space in durable retail outlets, it has a relatively low number and the lowest floor space in the convenience retail category.

The main retail area is basically T-shaped and very

compact and this has given the town some of the lowest values on average distance from the mean points of individual land uses (Table 3.3) and some of the highest values on the proportions of retail use within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection (Tables 3.7 and 3.8).

Office Use

Both the number of offices and the total office floor space in Falkirk's Central Area are low, indeed the total office floor space and the proportion of central area floor space in office use are both lower than in any of the other towns. Office use in the Burgh is very heavily concentrated in the purpose built premises in New Market Street and in Vicar Street, and in the upper floor premises in the High Street. The only significant area of peripheral expansion is to the east, where the Burgh Offices have been established in recent years. This heavy concentration in the older, relatively central locations is reflected in the very high proportion of offices within 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection, the highest in all the towns, and in the relatively low absolute average distance of office uses from their mean points.

Other Uses

The levels of provision and floor space in services and most other central area uses are similar to the levels in Dunfermline, Hamilton, Kirkcaldy and Stirling. Falkirk is however exceptionally well provided for in the way of catering space due to the presence of a few, very large, first floor restaurants in the core of the central area, rather than a very high number of outlets. As a result of the concen-

tration of these activities in a compact central area, they are more highly concentrated within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection than in most other towns.

AYR

Retail

Ayr has the largest number of outlets and the highest floor space in durable retailing and is second to Perth on both counts in terms of convenience retailing. A very high proportion of shops are located in the High Street, the principal shopping street, and in Sandgate and New Market Street, the main secondary shopping streets. The high number of shops, the linear nature of the central area and the presence of a secondary shopping node around Burns Statue Square, has resulted in a wider distribution of retailing in Ayr than in the other towns, particularly in the convenience group where the proportions are very much lower. This is particularly noticeable in the distribution of such categories as shoe shops, men's tailors and bakers, all of which are normally fairly tightly concentrated around the Central Area Mean Point but which in Ayr are more widely dispersed (See Tables 3.7 and 3.8).

Office Use

Ayr has the largest number of offices and appreciably more office space than any of the other towns. It has the most developed office district, around Wellington Square and the adjacent streets to the east, and although offices are still well represented in the High Street and other main shopping streets, only 18 per cent are within 200 yards of the Central

Area Mean Point and average distances from both the Central Area Mean Point and the mean point of individual office uses are high.

Other Uses

The numbers of services and most other central area land uses are also higher in Ayr than in any of the other towns, as indeed is the floor space in services, public houses and restaurants and garages. While these activities are more dispersed from their mean points and from the Central Area Mean Point, their locational characteristics are similar to those identified in the other towns.

HAMILTON

Retail

The number of convenience retail outlets and their floor space is at a similar level to that in most of the other towns. The number of durable outlets and the floor space on the other hand is the lowest of the eight towns. It should be noted that at the time of the survey of land use, the Burgh was in the middle of a major comprehensive redevelopment scheme which has since added some 200,000 square feet of floor space, mainly in durable retailing. It seems likely that at the time of this survey the floor space in retailing was reduced to allow this development to take place.

Retailing is very heavily concentrated in Quarry Street and Cadzow Street and the land between them. The compact shape of the retailing area together with the low number of outlets has resulted in the Burgh having low values on absolute average distance from

the mean points of individual retail uses and high values on the proportion of retail use within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection.

Offices

While Hamilton has slightly fewer offices than any of the other towns, total office floor space is slightly higher than in Dunfermline, Falkirk and Kilmarnock and non-Government office floor space is third highest to Perth and Ayr. Government office floor space is very low in Hamilton despite the Burgh's role as County Town. As was mentioned above, the County Offices are located at some distance from the Central Area.

Offices in Hamilton are to be found both in the main shopping streets and in the substantial peripheral office district in the north of Cadzow Street. The fairly compact shape of the central area is reflected in the relatively low average distances from the mean points of individual uses and slightly higher than average proportions within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection. The development of a substantial peripheral office district has meant that offices are more dispersed in Hamilton than in Dunfermline and Falkirk, which are of a similar size and also have a compact shape, but do not have such a marked peripheral office development.

Other Uses

The number of service premises is similar to that in Dunfermline, Falkirk, Kirkcaldy and Stirling but they are on average smaller and this has given the

Burgh the lowest floor space in this land use. The floor space in garage use is similarly low while the number of other central area uses is at a similar level to that in the four towns identified above. Service activity like retailing is fairly strongly concentrated around the Central Area Mean Point. The proportions of other central area uses within the zones from the Central Area Mean Point are, on the other hand, closer to the average of the eight towns. The more peripheral location of the Peak Land Value Intersection has resulted in an appreciably higher proportion of these uses being within the 200 yard zone from this point.

KILMARNOCK

Retail

Kilmarnock has a similar level of convenience retail outlets to Dunfermline, Falkirk, Hamilton and Stirling but the total floor space in this category is appreciably higher, being the third highest of all the towns. In terms of the number of durable retail outlets and durable retail floor space, Kilmarnock rates fourth. Although the central area is basically linear in form, a significant number of shops are to be found in the other streets leading from The Cross, in particular Bank Street, and in John Finnie Street. This has given rise to an interesting contrast between the relative degree of dispersal of convenience and durable retail outlets. While durable outlets are more heavily concentrated on the principal shopping street and have below average proportions of their number within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection, convenience retail outlets are

more heavily concentrated in the secondary shopping streets leading from The Cross and have above average proportions of their number within 200 yards of these points.

Offices

While Kilmarnock has the third highest number of offices, it is a poor third to Ayr and Perth and has only marginally more than the other towns. This is demonstrated in the table of floor space statistics where the total floor space can be seen to be in line with these other towns, Government office floor space being on the low side while non-Government office floor space is high. Offices are very strongly concentrated in the purpose-built buildings in John Finnie Street and in the other main shopping streets and this is reflected in relatively high proportions of offices locating within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection. Although there are no major peripheral office developments, the distance between the main concentrations of offices in the main through route and John Finnie Street has meant that the average distance from the mean point of individual office uses is a little higher than in all the other towns except Ayr and Perth.

Other Uses

Kilmarnock has the third highest number of services and other central area land uses and is third in terms of floor space in most of these activities. Services have a similar distribution to retail activities and are close to the average in terms of proportions within the 3 zones from the Central Area Mean Point and the Peak Land Value Intersection. The linear form of the central area and the peripheral

location of other central area uses has meant that this group is widely dispersed and has low values in each of the zones from these points and high values on the average distance from their own mean points.

KIRKCALDY

Retail

Kirkcaldy has fewer convenience outlets than the other towns and has the second lowest floor space in this category. While the number of shops selling durable goods is also relatively low, Kirkcaldy's floor space in this category is third highest. This contrast between a low number of durable outlets and a high total durable retail floor space is partly the result of the greater number of large variety stores in Kirkcaldy.

Retailing is almost wholly concentrated in the High Street and the retailing area is therefore linear in form. This has meant that despite the relatively low number of outlets, retailing is relatively widely dispersed and that the proportions of both categories within the 3 zones of the Central Area Mean Point and the Peak Land Value Intersection are among the lowest of all the towns.

Offices

Kirkcaldy has one of the lowest number of offices and a low level of non-Government office floor space. Total office floor space however is high as Kirkcaldy has the second highest amount of Government office floor space. Although Kirkcaldy is not the County Town, the concentration of a high proportion of Fife's population in the south of the County has encouraged the development of many county functions within the

Burgh's central area.

Offices are spread throughout the High Street, although there is a concentration in purpose built offices in the area around the junction with Cow Wynd, and in the peripheral office area to the west of the High Street. The proportion of offices within 200 yards of the Peak Land Value Intersection is below the average for all the towns while the proportion within 200 yards of the Central Area Mean Point is appreciably above the average. This contrast is the result of the concentration of offices in the north of the principal shopping streets, the relatively peripheral location of the former point and the more central location of the latter.

Other Uses

Kirkcaldy has very low numbers of both services and other central area uses but, as with office use, the total floor space is more substantial than might be expected on the basis of numbers.

Services are distributed throughout the High Street and the proportions within 200 yards of the Central Area Mean Point are relatively low. The proportion of other central area land uses in this zone is also low as a result of their peripheral location and the linear nature of the central area.

PERTH

Retail

The number of convenience retail outlets is appreciably higher than in any of the other towns while the number of durable retail outlets is second to Ayr and appreciably more than in the remaining towns.

The average size of shop in Perth is, however, low and this means that while Perth has the highest floor space in convenience retail use, it does not have as great an area as might be expected on the basis of the number of shops, while floor space in durable retailing is third highest and very close to the fourth and fifth towns.

The principal shopping street, High Street, does not dominate the distribution of shops in Perth as much as it does in the other centres, South Street and the numerous other secondary shopping streets such as South Methven Street having a high number and relatively high proportion of retail outlets.

The very large number of shops in Perth would suggest that the proportion within 200 yards of both the Peak Land Value Intersection and the Central Area Mean Point would be low relative to the other towns. The compact nature of the central area has however meant that the values for convenience shops are not far below the average, while the durable retail figure is almost on the average.

Office Use

Perth has the second largest number of offices and the largest office floor space. Offices are widely dispersed, being well represented in the High Street, in the purpose-built office areas in Tay Street and South Methven Street and in the peripheral office areas of County Place and York Place to the west and Charlotte Street and Atholl Crescent to the North East. The wide dispersal of offices and the high proportion in peripheral locations has given Perth the lowest proportions of offices within 200 yards of the Peak Land Value Intersection and the

Central Area Mean Point. The absolute values on average distance from the mean points of individual office uses are high and are only matched by the values in Ayr.

Other Uses

The numbers of service activities and other central area uses, like the number of offices, are second to Ayr, while the floor space in services and garages use are at a similar level. The floor space in catering is however only half the level in Ayr. The proportions of both services and particularly other central area land uses within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection are both well below the average for the eight towns and this reflects the wide dispersal of these activities in the Burgh.

STIRLING

Retail

Stirling has a slightly greater number of convenience retail outlets than all the towns except Ayr and Perth, which have appreciably more than the others. The number of durable retail outlets is, on the other hand, low although the floor space is reasonably high. Most of the shops are located on the main through route and in King Street. The retailing area is therefore fairly compact and as a result, the central area has appreciably above average proportions of its retail use within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection.

Office Use

The number of offices is of the same order as that in

Dunfermline, Falkirk, Hamilton and Kilmarnock but due largely to the very high floor space in the new County Offices, the total floor space in office use is third highest of the towns being studied.

Offices are concentrated in the main shopping streets and in the substantial area of peripheral office development to the south of, but close to, the main shopping area. The relative close proximity of the peripheral offices to those in the main shopping area has resulted in above average proportions of offices being located within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection.

Other Uses

The numbers of services and other central area uses are among the lowest of the central areas, while the floor space in these activities is also fairly low, except in the case of garages which is in an intermediate position. The relatively compact nature of the central area has given these activities above average proportions within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection, the higher proportion within 200 yards of the latter point reflect its more peripheral location, closer to the main concentration of these activities.

CONCLUSIONS

INTERNAL STRUCTURE OF THE CENTRAL AREA

Ratcliffe,[1] over 30 years ago, demonstrated that the central business district (of large cities) tended "to exhibit a systematic internal spatial organisation of uses arising from a process of economic selection which is part of the process giving form and reason to the urban organisation of functional areas". Murphy, Vance and Epstein[2] have more recently described horizontal and vertical patterns in the central business districts of generally smaller cities in America and other research workers have noted these features in cities in other industrialised countries such as Australia and South Africa. This thesis has demonstrated that there is also a clear spatial ordering of land uses within the central areas of the appreciably smaller medium sized Scottish towns.

In considering the spatial ordering of land uses in the towns studied, it is convenient to look at each of the main land use groups individually.

RETAILING

In medium sized Scottish towns, retail land use, particularly sales area, is very largely concentrated at ground floor level. While retail storage is more commonly found on upper floors, upper floor sales area is limited to a few retail categories, particularly department and furniture stores, and is largely confined to the most accessible sections of the principal shopping streets.

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1. Ratcliffe RU "The Problem of Retail Site Selection" Michigan Business Studies, Vol.9 no.1, 1939.
2. Murphy R.E,Vance,J.E.Jr and Epstein,B.J "Internal Structure of the GCB" Op.Cit.

Retail establishments are strongly tied to the more accessible locations within the central area and within the shopping area there is a definite ordering of retail uses as a result of the action of economic forces. A high proportion of retail outlets are concentrated on the principal shopping street, in all cases the main route through the town, and there is a clear relationship between the presence of retailing in other shopping streets and the volume of movement, both pedestrian and vehicular. In comparison with other land uses, retailing has the highest proportion of its number within 200 yards of both the Central Area Mean Point and Peak Land Value Intersection. Tables 3.7 and 3.8 demonstrate this position and also show that while the values for convenience retail use are only marginally higher than many of the other main uses, those for durable retailing are very much higher, showing its greater need for, and ability to command, a central site. The absolute values, which depend to a great extent on the shape of the central area, range widely between the eight towns but the relative positions are on the whole the same. The only town where the situation is markedly different is Dunfermline where there are a large number of secondary shopping streets close to the core of the central area and this has affected the balance between durable and retail land use.

Within both the convenience and durable retail groups, there are wide variations in the need for and ability to command highly accessible sites.

Of the convenience retail group, only bakers can command sites in the core of the central area and even in their case the proportions within 200 yards of the Central Area Mean Point and the Peak Land

Value Intersection are appreciably below the values for the most centralized of the durable retail groups. At the other extreme, a very high proportion of newsagents and confectioners are to be found located in premises beyond 200 yards from these points and rated below 50 per cent of the peak rate.

Shoe shops, men's and women's tailors, variety stores and department stores, other than cooperative department stores, are the most highly centralized of durable retail uses, and indeed all uses, having exceptionally high proportions of their number located in premises rated with 25 per cent of the peak frontage value, while the proportions within 200 yards of the Central Area Mean Point and the Peak Land Value Intersection are appreciably higher than for any other land uses.

A second group of durable retail land uses which are heavily concentrated in the least accessible shopping areas can be identified. The categories included in this group are shops selling paper and paint, office equipment, antiques, music, sports,goods, photographic equipment, cycles and books. These shops are heavily concentrated in premises rated below 50 per cent of the peak value and beyond 200 yards from the Central Area Mean Point and the Peak Land Value Intersection.

The remaining durable retail land uses are more widely distributed throughout the central area. They show different degrees of concentration on the more accessible sites but are in general fairly well represented both in each of the frontage value classes and in and beyond the three zones from the Central Area Mean Point and the Peak Land Value Intersection. All the convenience retail categories except news-

agents and confectioners fall into this group.

SERVICES

Service activities, except for skilled trades, are mainly to be found in ground floor premises in the main shopping streets and like retailing, are strongly influenced by economic factors related to accessibility. Dry cleaners and shoe repairers generally locate in highly accessible sites, although seldom in the most accessible sites, while photographers, hairdressers and skilled trades are in less accessible sites, although not always at a great distance from the core of the central area.

MEDICAL SERVICES

In comparison with the other main groups, medical services have the lowest proportion of their number within 200 yards of both the Central Area Mean Point and the Peak Land Value Intersection. As was described earlier in Section 3, opticians and dentists are spread throughout the main shopping streets while doctors, chiropodists and vets tend to have extremely peripheral locations.

OFFICE USES

Offices are the only land use group which shows marked variations in location between the eight central areas. There is a definite trend towards the development of a distinct peripheral office district as the number of offices in the central area increases. This development is most marked in Ayr and Perth but can also be identified, to a lesser extent, in all the central areas studied.

Most offices do not require frequent contact with their customers and accessibility is not a major factor in site selection, the availability of suitable office premises being more important in most cases. Suitable office premises tend to be concentrated in a limited number of locations; in upper floor premises in the more accessible sectors of the principal shopping streets, in purpose built buildings in secondary shopping streets, or in off centre principal shopping street locations where there are no major secondary shopping streets, and in peripheral areas where there is housing suitable for conversion to office use.

Banks are the only office category which locate only in ground floor premises and command central locations, having a higher proportion of their number within 200 yards of the Central Area Mean Point than all land uses except for the most centralized durable retail uses. Legal offices and to a lesser extent finance and insurance and other professional offices are also well represented in the core of the central area. In these cases, however, except for building society offices, they are to be found in upper floors.

The remaining office categories, while being present in the core of the central area, are on the whole located in less accessible locations on the fringe of the central area, particularly in the peripheral office areas.

OTHER CENTRAL AREA USES

Considering the average over the eight towns, other central area uses as a group have similar proportions of their number within 200 yards of the Central Area

Mean Point and the Peak Land Value Intersection as services, convenience retail and offices. In most towns, however, the proportions within 100 yards of these points is appreciably lower, indicating their wider dispersal from the core of the central area.

None of the categories in this group is highly concentrated in the core of the central area. Public houses are, however, mainly to be found in shopping streets and are found throughout the central area while entertainment activities are generally found in areas of intermediate accessibility close to the main shopping streets. Religious institutions, wholesale warehouses, hotels and especially garages tend to concentrate in peripheral sites and in the less attractive sites closer to the core of the central area.

It is possible to show the above analysis in the form of the following table:

LOCATION OF LAND USE CATEGORIES

	Land Uses which are highly concentrated in the core of the central area	Land Uses which are distributed throughout the central area.	Land Uses which are mainly located in less accessible and peripheral locations
Convenience Retail		Baker Butcher Grocer Greengrocer Fishmerchant	Newsagent Confectioner
Durable Retail	Variety Store Men's Tailor Department Store Shoe Shop Women's Tailor	Jeweller Tobacconist Leather goods shop Chemist Other clothing Furniture store Electrical goods shop Hardware store	Book Shop Cycle Shop Camera Shop Sports goods shop Antique shop Music shop Paper & Paint shop Office equipment shop

Medical Services	Optician (Dentist)	Doctor Chiropodist Veterinary Surgeon
Offices	Banks (Legal Office) (Finance & Insurance Office) (Other Professional Office)	National Govt. Office Betting office Local Govt. Office General Business Office
Services	Dry cleaner Shoe repairer	Photographer Hairdresser Skilled Trade
Other Central Area Uses	Public House Entertainment Restaurant/ Cafe	Hotel Wholesale warehouse Religious Institution Garage

Brackets are around land uses which are distributed throughout the central area and are normally above ground floor level in the main shopping areas.

The general pattern of land use distribution described in this table does not vary widely from that described by other research workers such as Scott[1], Ratcliffe[2], Murphy, Vance and Epstein[3], and Mika[4] in the towns they studied. For example, Scott in his investigations on a wide size range of Australian CBDs, found that department stores, variety stores, women's clothing shops, shoe shops and to a lesser extent men's tailors,

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1. Scott, P. "The Australian C.B.D", Economic Geography, Vol.35, 1959.

2. Ratcliffe, R.U. "Demands for Non-Residential Space" in "Readings in Urban Geography edited by Mayer H.M. and Kohn, C.F., University of Chicago Press, Chicago, 1959.

3. Murphy, R.E., Vance J.E.Jr and Epstein,B.J. "Internal Structure of the C.B.D." Op. Cit.

4. Mika, P.J. "A Comparative Study of some English and American Central Business Districts", Unpublished Ph.D. thesis, Clark University, 1965.

were the principal elements in his "inner retail area", while bakers, greengrocers and delicatessens, together with a range of durable retail outlets were the secondary elements. The outer retail elements included automobile showrooms, furniture stores and storage, hardwaar stores, electrical goods shops and stationers. Similarly, Murphy, Vance and Epstein found that variety stores, clothing stores and general offices were the main uses in their first "100 yards zone" while automotives, household goods and wholesaling tended to concentrate in their fourth zone.

FUNCTIONAL DIFFERENTIATION

Murphy, Vance and Epstein concluded that there was no functional differentiation in the American towns in the 200,000 size range which they were considering and that this was a feature only of larger towns. This analysis has demonstrated that there is little evidence of functional differentiation in medium sized Scottish towns. Other than the marked clustering of certain retail categories in the core of the central area to gain advantage of its high accessibility,antique shops are the only category to show any marked grouping, and even here it seems likely that the grouping is as much a factor of the availability of suitable premises close to historic features as any conscious location decision to benefit from the proximity to similar types of shop.

INTENSITY OF LAND USE

As was pointed out in Section 1, the central business height index, either as developed by Murphy and Vance or in a modified form, is not a particularly useful measure for studying the intensity of central area land

use in medium sized towns in Scotland. The Central Area Height Index is, however, valuable for this purpose as it demonstrates the vertical development of central area land uses throughout the central area. Map 3.37 shows the distribution of plots with a Central Area Height Index of more than 1 and more than 2 and it is immediately apparent that the overall proportion of frontage with more than two floors of central area land use is low. The two main types of location where central area height indices of over 1 are to be found are strongly related to the main areas where there is a substantial office development. The first is in the core of the principal shopping streets and in the main secondary shopping streets and the second is in peripheral office areas.

While Central Area Height Index values of over 1 and over 2 are to be found in both the main shopping streets and in the peripheral office areas, plot ratios[1] are very much lower in the peripheral office districts which mainly consist of detached or terraced houses set in their own grounds.

It can be seen that intensity of use is highest in the core of the central area, in the main shopping streets, where multiple floor occupancy is combined with high plot ratios. While the Peak Land Value Intersection (see maps 3.36 and 3.37) is generally located centrally in the area of greatest intensity of land use, this is not always the case as for example in Dunfermline and Kirkcaldy.

RELATIONSHIP BETWEEN THE PEAK LAND VALUE INTERSECTION, THE CENTRAL AREA MEAN POINT, THE GEOGRAPHIC CENTRE AND THE MEAN POINTS OF THE MAIN LAND USE CLASSES (Map 3.36)

In most of the towns, the Peak Land Value Intersection

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1. The plot ratio is the area of floor space on all floors as a proportion of the area of the plot of land on which the buildings are constructed.

is at some considerable distance from the other main points of reference. In the more compact shaped central areas of Falkirk and Dunfermline, there is a reasonably close relationship between these points. In the other towns, particularly where there has been major peripheral office development, e.g. Ayr, or where there has been substantial, but directionally restricted, central area growth, e.g. Kilmarnock, the Peak Land Value Intersection is at a distance of some 300 to 500 ft from the Central Area Mean Point and at times at an even greater distance from the Geographic Centre and the mean points of the main land use groups.

In relation to the Peak Land Value Intersection, the Central Area Mean Point and the other points of reference are located in the direction of the principal post 1882 areas of assimilation. The main exceptions to this position are Perth, where there has been only limited all round growth and Kirkcaldy, where the central area is strongly linear in form with no strong secondary shopping street and a weakly developed Peak Land Value Intersection. This feature is in line with the results of previous studies, e.g. Murphy and Vance in their studies of American towns and Mika in his comparison of Southampton, Norwich and Derby with these towns.

There is a strong relationship between the Geographic Centre, the Central Area Mean Point and the mean points of the main land use groups, indeed in most cases these can normally be located within a circle of a radius of 150 ft. The "mean point of office use" is usually at the greatest distance from the Central Area Mean Point and in the direction of the main peripheral office area. Because of the lower

intensity of use of the land in the peripheral office areas, the land taken up in these developments is much greater than the number of subjects would suggest and thus these areas have a stronger influence on the location of the Geographic Centre than on the location of the Central Area Mean Point.

SIZE OF THE CENTRAL AREA

The physical size of the central area of medium sized towns in Scotland is very much a factor of local conditions, particularly street patterns and the shape of street blocks. In view of this it is not considered a useful exercise to calculate and to compare the absolute size of the central areas, a more meaningful comparison being that of the floor space devoted to each of the main land use groups. It is worth noting, however, that there is a general relationship between the total number of central area land uses and the physical size of the central area. This can be seen from the maps of the central areas which show, for example, that the more important regional centres of Ayr and Perth have the largest central areas, while the towns with fewer central area land uses, e.g. Dunfermline and Hamilton, have smaller central areas.

The floor space in central area land use is discussed in the following paragraphs on the relative levels of service in the central area. It should be noted, however, that it has not been possible to obtain floor space statistics for all central area uses as in some cases these are not relevant in the calculation of the gross annual value, for example in the case of cinemas where the assessment is based primarily on seating capacity.

COMPARISON OF CENTRAL AREA FUNCTIONS

While this thesis is primarily concerned with the geographical aspect of the physical growth and internal structure of the central area, it has provided useful information on the relative levels of service in the towns studied. Table 3.6 shows the floor space in the main land use groups for which information is available, and the aggregate floor space in these groups in each of the central areas.

The figures demonstrate that durable retailing is by far the largest central area land use in medium sized towns, having between one-third and one-half of all central area floor space. Office use makes the next largest demands on central area floor space, between one-fifth and one-third of floor space being devoted to this group. Garage use makes the next largest demand on central area floor space, there being approximately 10 per cent in this category, while catering, convenience retail and services, in declining order of importance, each have between 4 and 10 per cent of central area floor space.

The most striking features of the relative functions of the central areas are that the levels of service vary much more than the range of population of the towns and that there is no clear relationship between burgh population and level of service. It is apparent that the regional roles of these towns play a major part in determining the level of service in their central areas and this is particularly so in the case of durable retailing, offices and garages.

The two centres with the greatest total central area

floor space are the geographically isolated regional centres of Ayr and Perth, both of which have very high levels of floor space in virtually all of the main land use groups. Dunfermline, being fairly close to Edinburgh and Kirkcaldy, and Hamilton, being close to a number of centres in the Glasgow conurbation, have on the other hand less important regional roles and have lower proportions of land use in each of the categories.

The proportions of floorspace in convenience retailing and services are the most liable to fluctuations which are not easy to explain in terms of urban or hinterland population and this is probably because they are most affected by the levels of provision elsewhere in the town and its hinterland, e.g. the very low values in Falkirk, Hamilton and Kirkcaldy where the central area is in a particularly off centre location and where local shopping centres provide an above average proportion of this type of service.

It is not possible to make a direct comparison of the floorspace data in this study with that in previous work as the figures do not relate to strictly comparable areas, the statistics do not relate to the same land uses and the statistics are presented in different forms. Taking Diamond's work in Glasgow and Mika's comparison of three English CBDs with the nine CBDs studied by Murphy and Vance, it is possible, however, to see that retailing is much more important in the central areas of medium sized towns than in the CBDs of larger towns and cities, e.g. in his work on Glasgow, Diamond demonstrated that office floorspace was slightly greater than "retail, pubs etc." floorspace. The present work has demonstrated that in the towns studied retailing by far is the dominant land use

while other central area uses and particularly office use are accordingly less significant.

TABLE 3.6

TOTAL FLOOR SPACE BY MAJOR LAND USE CATEGORIES

	Convenience Retail	Durable Retail	Government Offices	Other Offices	Service	Cafes/ Restaurant/ Public House	Garage Use	TOTAL Floorspace
Ayr	92,282	689,084	164,803	231,702	125,767	130,034	191,449	1,625,121
Dunfermline	77,790	381,544	97,510	140,697	49,870	44,227	61,315	852,953
Falkirk	40,337	557,345	76,600	150,330	38,635	120,948	99,562	1,083,758
Hamilton	57,118	276,212	51,900	205,307	29,680	76,313	60,861	757,391
Kilmarnock	85,705	469,993	57,160	186,637	73,641	64,049	129,497	1,066,682
Kirkcaldy	54,323	532,534	185,600	154,566	45,066	72,323	106,370	1,150,782
Perth	113,147	466,799	118,055	294,121	75,759	64,015	139,805	1,271,701
Stirling	65,759	468,673	187,860	182,195	51,960	65,643	114,149	1,136,239

PROPORTION OF FLOOR SPACE* IN MAJOR LAND USE CATEGORIES

Ayr	5.7	42.4	10.1	14.2	7.7	8.0	11.8
Dunfermline	9.1	44.6	11.4	16.5	5.8	5.2	7.2
Falkirk	3.7	51.4	7.1	13.9	3.8	11.2	9.2
Hamilton	7.5	36.5	6.9	27.1	3.9	10.1	8.0
Kilmarnock	8.0	43.7	5.3	17.4	6.8	6.0	12.0
Kirkcaldy	4.7	45.8	16.0	13.3	3.9	6.2	9.1
Perth	8.8	36.4	9.2	22.9	5.9	5.0	10.9
Stirling	5.8	41.2	16.5	16.0	4.6	5.8	10.0

*Proportions are calculated on total land use in these categories

TABLE 3.7

PROPORTION OF MAIN LAND USE GROUPS WITHIN DISTANCE ZONES OF THE CENTRAL AREA MEAN POINT

		AYR	DUNFERM-LINE	FALKIRK	HAMILTON	KILMAR-NOCK	KIRKCALDY	PERTH	STIRLING	AVERAGE*
Convenience Retail	0-100yds	11	30	32	34	8	11	10	12	17
	0-150yds	16	45	45	40	27	13	20	21	27
	0-200yds	25	59	57	53	44	24	34	40	41
Durable Retail	0-100yds	13	19	27	30	18	17	15	36	21
	0-150yds	26	35	44	45	32	31	29	48	35
	0-200yds	36	52	70	70	44	42	49	64	52
Medical Service	0-100yds	4	22	23	17	7	8	0	0	10
	0-150yds	13	48	38	17	27	8	13	0	21
	0-200yds	17	57	54	42	27	8	25	25	32
Office	0-100yds	6	23	16	11	18	19	8	25	15
	0-150yds	13	44	55	26	32	33	33	43	37
	0-200yds	18	56	68	44	56	53	48	52	41
Service	0-100yds	5	28	12	14	17	12	9	15	13
	0-150yds	11	35	34	26	32	18	16	28	24
	0-200yds	20	45	47	48	44	36	28	38	36
Other Central Area Uses	0-100yds	7	22	15	7	14	9	3	20	10
	0-150yds	13	48	30	17	24	18	11	38	21
	0-200yds	22	74	51	41	45	26	24	45	37

*Average for all eight towns.

TABLE 3.8

PROPORTION OF MAIN LAND USE GROUPS WITHIN DISTANCE ZONES OF THE PEAK LAND VALUE INTERSECTION

		AYR	DUNFERM-LINE	FALKIRK	HAMILTON	KILMARN-OCK	KIRKCALDY	PERTH	STIRLING	AVERAGE*
Convenience Retail	0-100 yds	9	25	22	15	22	17	6	9	15
	0-150 yds	15	35	40	29	29	33	12	19	24
	0-200 yds	19	55	51	45	43	39	31	42	38
Durable Retail	0-100 yds	19	23	26	26	20	29	16	24	22
	0-150 yds	31	37	36	41	33	37	24	40	34
	0-200 yds	43	47	56	56	47	45	51	57	50
Medical Services	0-100 yds	4	26	23	20	0	15	0	6	12
	0-150 yds	9	39	31	33	0	26	0	19	22
	0-200 yds	13	57	69	40	7	26	6	19	32
Office	0-100 yds	13	18	13	18	18	4	5	19	13
	0-150 yds	18	34	27	34	27	17	7	25	22
	0-200 yds	25	45	51	49	48	31	22	40	36
Service	0-100 yds	11	20	22	11	10	9	3	18	12
	0-150 yds	15	30	44	31	17	24	17	31	24
	0-200 yds	20	42	63	46	31	24	34	56	37
Other Central Area Uses	0-100 yds	7	23	11	28	11	9	2	14	12
	0-150 yds	10	42	21	42	28	23	8	27	23
	0-200 yds	17	60	44	51	39	32	20	41	36

*Average for all eight towns.

SECTION 4

CONCLUDING OBSERVATIONS

Diamond, in his study of Glasgow's central business district, concluded that it was the similarities with the CBDs of cities in other industralised countries rather than the differences which were most striking. He also concluded that the structure of Glasgow's CBD was in line with what might be predicted on the basis of existing knowledge. Despite the substantial difference in size between Glasgow, a city with almost 1m people, and the medium size town studied in this thesis, all of which are between 29,000 and 52,000, the same conclusions must be drawn for medium sized Scottish towns. Where there are significant differences in character between the central areas of medium sized Scottish towns and the central business districts of larger towns and cities in Britain and other industralised countries, these can be related to the overall level of service rather than to any different underlying factors influencing the structure.

The following are the more important of the characteristics of central areas which have been identified in the current research and have also been recognised by workers in other countries investigating towns in a wide range of sizes.

The central area is in the most accessible location within the region, being located at the focus of the local and regional road networks.

The central area is the main focus of commercial activity in the town and also contains most of the cultural

and recreational facilities which serve the whole town and its hinterland.

As central area land use expands, so residential and other non central area land uses are driven out.

There is a definite ordering of land use within the central area. Activities which required the maximum potential custom locate in the most accessible sites while other land uses show differing degrees of concentration or dispersal depending on their need for and ability to command accessible sites. In general retailing, particularly durable retailing, requires the most accessible sites while offices and other central area uses such as garages, wholesaling and religious institutions tend to concentrate in less accessible sites on the fringes of the central area. This is particularly the case in the larger centres studied.

The greatest pressure for sites is to be found in the heart of the central area and this is reflected in the vertical expansion of central area land use and the higher plot ratios. There is no increase in building height, however, in the core of the central area.

The growth of the central area has been influenced by the same attractions and social and physical constraints to growth which have been noted in previous studies of central business districts. In particular, recent expansion has been largely towards better quality housing areas.

The smaller size of the medium size Scottish towns and the lower level of service provided in their central areas are the major factors leading to the differences

between the characters of their central area and the central business districts of larger settlements.

A basic feature, identified in Section 1, is that a wide range of activities, such as skilled trades, religious institutions and medical services, which might serve a distinct part of a larger town, provides a service for the whole of the medium sized town and often its hinterland and locate in the town centre as there is no feasible alternative to a central area site. This location is encouraged by the relatively low absolute level of demand for central sites which has meant that land values in the central area fall off rapidly from their peak. As a result it is thus possible to obtain a site within tolerable distance of the core of the central area at a reasonable cost.

A further difference arising from the relatively low demand for central sites is that the vertical expansion of central area land use is restricted. Many activities which might be forced to locate in upper floor premises in larger central business districts can locate at ground floor level within tolerable distance of the most accessible locations, e.g. Retail sales area is largely confined to ground floor premises in medium sized Scottish towns.

The lower number of land uses which require a highly accessible site means that activities which are largely absent from the most accessible locations in central business districts, e.g. banks and convenience retail uses such as bakers, grocers and greengrocers, are to be found in fairly central locations in the central area. Because of this it is not practical to delimit a central area core as has been possible in other studies

of larger towns. There is, however, an area in the centre of the central area where the qualities of the region are most marked.

POLICY IMPLICATIONS

Although this study was not initiated with the specific intention of identifying implications for planning policies, the work has highlighted some trends which have a bearing on the plans for future development of the central area of medium sized towns.

The central area has been subject to physical expansion throughout the last 90 years and there is no evidence of any reduction in the rate of growth in recent years. In making future plans provision will particularly have to be made for the following two expanding land uses. Firstly, office use which is mainly expanding into housing suitable for conversion to office premises and secondly, land uses associated with the expanding use of the motor car. In this latter case the demands for land are more likely to be met by the redevelopment of industrial and poor quality residential buildings.

Certain activities such as skilled trades require a central site within the town but can only afford to locate in cheaper, less desirable property. These activities tend to be forced to move under comprehensive redevelopment and, as this form of development expands, alternative locations will be increasingly hard to find and some form of provision will have to be made for them.

Finally the work in this thesis has demonstrated that increased efficiency in retailing has meant that in recent years there has been a marked reduction in the number of shops and very little expansion of the central

area for retailing. Most local authority redevelopment plans incorporate a major growth in retail floor space and it is suggested that the viability of these plans be thoroughly investigated before they are finally approved and construction implemented.

APPRECIATION OF TECHNIQUES

The delimitation technique developed for this thesis provides what the author considers to be a true picture of the central area as it is described in Section 1. The technique has since been applied to delimit the central areas of all the burghs and larger settlements in West Central Scotland as part of the shopping studies carried out by the West Central Scotland Planning Team. Subsequent discussions with the local authority planning officers have confirmed the reliability of the technique in that the central areas delimited by the team were agreed by the planning officers.

The measures of dispersal, the proportions of land use in the three distance zones from the Central Area Mean Point and the Peak Land Value Intersection and the average distance from the mean point of individual land uses, when combined with the proportions of each land use in the frontage value classes, provide a useful description of land use distribution. The relevance of the Peak Land Value Intersection as a point of reference does not appear, however, to be as great in the medium sized Scottish towns as in larger centres. The main reason for this is the dominance of a single shopping street in many of the towns of this size and the lack of any major junctions around which the central area has developed. The assessor's information is particularly valuable in providing an understanding of

the distribution of land use as it is not related to any specific point but reflects accessibility and land values.

One of the problems in carrying out a study of this nature, is that no two retail outlets, offices etc, are the same, and in many cases land uses in the same general category, e.g. the gradation from corner shops to supermarkets, have different locational demands.

FURTHER RESEARCH

While this study has looked at the change in the number of subjects in each land use category and also at the locational change of the main land use groups, an extremely valuable analysis would be a longitudinal study of changes in location and floor space of retail land use categories. No accurate historical information is available on either topic for Scottish towns and any further research would be more of a monitoring task rather than an historical analysis. Changes in central area structure and size, however, occur relatively quickly, e.g. the recent expansion of supermarkets and the movement of building society offices into shopping streets and the recent growth in retail floor space in Hamilton. An analysis of these changes, even over a relatively short time, would provide valuable guidance in the preparation of development plans for towns of this size. The information collected for this thesis would provide a useful starting point for a longitudinal study of this kind.

APPENDIX A

LAND USE CLASSIFICATION

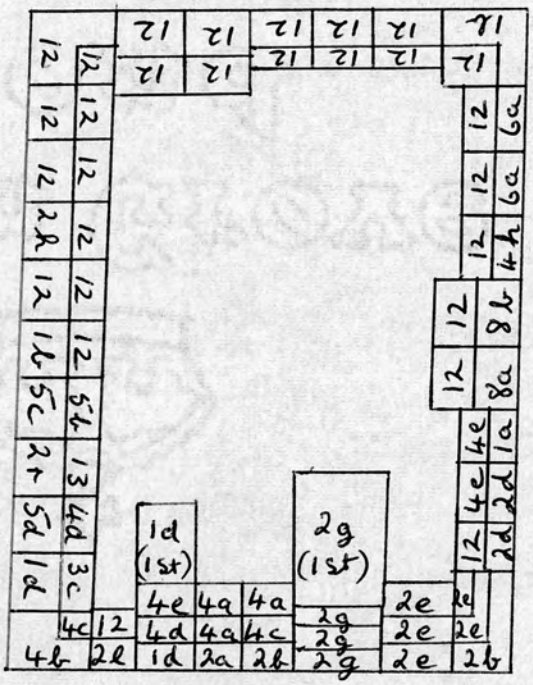
General Category	Individual Category	Explanatory Notes
1. Convenience Retail	a) Newsagent	All shops selling daily newspapers
	b) Confectioner	
	c) Butcher	
	d) Grocer	Includes supermarkets
	e) Greengrocer	
	f) Baker	
	g) Fishmerchant	
2. Durable Retail	a) Shoe Shop	
	b) Men's Tailor	Shops specializing in the sale of men's outer wear.
	c) Women's Tailor	Shops specializing in the sale of women's outer wear and dresses. Milliners and furriers.
	d) Other clothing and draper	
	e) Furniture Store	Including shops selling only carpets.
	f) Hardware Store	
	g) Variety Store	Restricted to the large variety chain stores of Woolworths, Marks & Spencers, British Home Stores and Littlewoods.
	h) Electrical Goods Shop	Includes the sale of radios and televisions.
	i) Paper and Paint Shop	
	j) Office equipment	
	k) Leather goods	
	l) Tobacconist	

	m) Antique Shop	
	n) Jeweller	
	o) Music Shop	Shops specializing in the sale of music, records and musical equipment.
	p) Sports Goods Shop	
	q) Camera Shop	Sale of photographic equipment and film.
	r) Cycle Shop	
	s) Book Shop	
	t) Chemist	
	u) Other retail Shop	
3. Medical Offices	a) Veterinary Surgeon	
	b) Chiropodist	
	c) Optician	
	d) Doctor	
	e) Dentist	
4. Offices	a) Finance and Insurance	
	b) Bank	
	c) Legal	
	d) Other Professional	Examples include: Architect's and Surveyor's offices.
	e) General Business	Examples include: Coal Merchant and Co-operative Society Offices.
	f) National Government	
	g) Local Government	
	h) Betting Office	

5. Services	a) Skilled Trades	Includes plumbers, electricians, joiners and glaziers.
	b) Photographer	
	c) Hairdresser	
	d) Dry Cleaner	
	e) Shoe Repairer	
6. Warehouse/ Storage	a) Wholesale Warehouse	
	b) Wholesale Storage	
7. Entertainment		Each property identified by type of use.
8. Caterers	a) Public House	
	b) Restaurant/Cafe	
	c) Central Area Hotel	
	d) Other Hotel	
9. Institutions		Each property identified by type of use.
10. Garages	a) Car Showrooms	Where apart from other garage use.
	b) Garage	
11. Industry		Each property identified by type of use.
12. Housing		
13. Vacant		

APPENDIX B

LAND USE SURVEY: SAMPLE BLOCK



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